

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Sorrells *et al.*

Appl. No. 09/855,851

Filed: May 16, 2001

For: **Apparatus, System, and Method  
for Down-Converting and Up-  
Converting Electromagnetic  
Signals**

Confirmation No. 9178

Art Unit: 2681

Examiner: (to be assigned)

Atty. Docket: 1744.1260001

**Letter to PTO Draftsman: Submission of Formal Drawings**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith are ninety-four (94) sheets of formal drawings with Figures 1A-1D, 2, 3A-3G, 4, 5, 6A-6B, 7A-7B, 8-12, 13A-13I, 14-15, 16A-16O, 17, 18A-18E, 19, 20A-20F, 21-23, 24A-24K, 25A-25F, 26A-26F, 27A-27E, 28-30, 31A-31C, 32-44, 45A-45E, and 46-62, corresponding to the informal drawings submitted with the above-captioned application. Identification of the drawing(s) is provided in accordance with 37 C.F.R. § 1.84(c). Acknowledgment of the receipt, approval, and entry of these formal drawing(s) into this application is respectfully requested.

It is not believed that an extension of time is required, other than any already provided herewith. However, if an extension of time is needed to prevent abandonment of the application, then such extension of time is hereby petitioned. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. A duplicate copy of this Letter is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Michael Q. Lee  
Attorney for Applicants  
Registration No. 35,239

Date: NW 2, 2001

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Washington, D.C. 20005-3934  
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TIMOTHY M. SPEER\*\*  
AARON L. SCHWATZ\*\*

\*LIMITED TO MATTERS  
AND PROCEEDINGS BEFORE  
FEDERAL COURTS & AGENCIES  
\*\*REGISTERED PATENT AGENT  
\*\*\*SENIOR COUNSEL

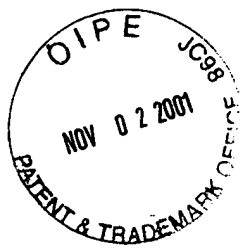
November 2, 2001

WRITER'S DIRECT NUMBER:

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INTERNET ADDRESS:

mlee@skgf.com



Commissioner for Patents  
Washington, D.C. 20231

Art Unit 2681

Re: U.S. Non-Provisional Utility Patent Application  
Appl. No. 09/855,851 Filed: May 16, 2001  
For: **Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals**  
Inventors: Sorrells *et al.*  
Our Ref: 1744.1260001

Sir:

Transmitted herewith for appropriate action are the following documents:

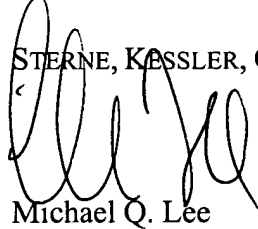
1. Letter to PTO Draftsman: Submission of Formal Drawings (*in duplicate*);
2. Ninety-four sheets of formal drawings (Figures 1A-1D, 2, 3A-3G, 4, 5, 6A-6B, 7A-7B, 8-12, 13A-13I, 14-15, 16A-16O, 17, 18A-18E, 19, 20A-20F, 21-23, 24A-24K, 25A-25F, 26A-26F, 27A-27E, 28-30, 31A-31C, 32-44, 45A-45E, and 46-62), approval of which is respectfully requested; and
3. One return postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Commissioner for Patents  
November 2, 2001  
Page 2

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. A duplicate copy of this letter is enclosed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael Q. Lee". The signature is fluid and cursive, with the first name "Michael" being the most prominent part.

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Michael Q. Lee  
Attorney for Applicants  
Registration No. 35,239

Enclosures

MQL/sjc  
P:\USERS\VEASTON\1744.1260001\DRAWING.CVR  
SKGF Rev. 4/27/00 mac

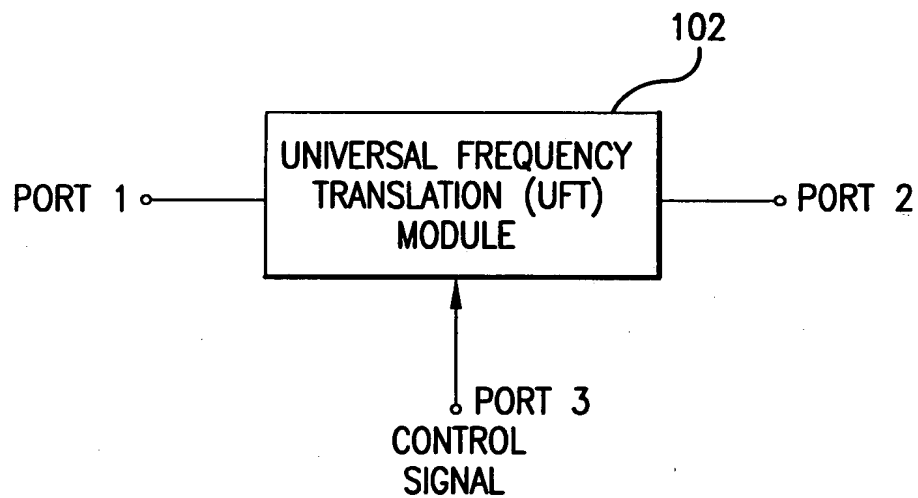


FIG. 1A

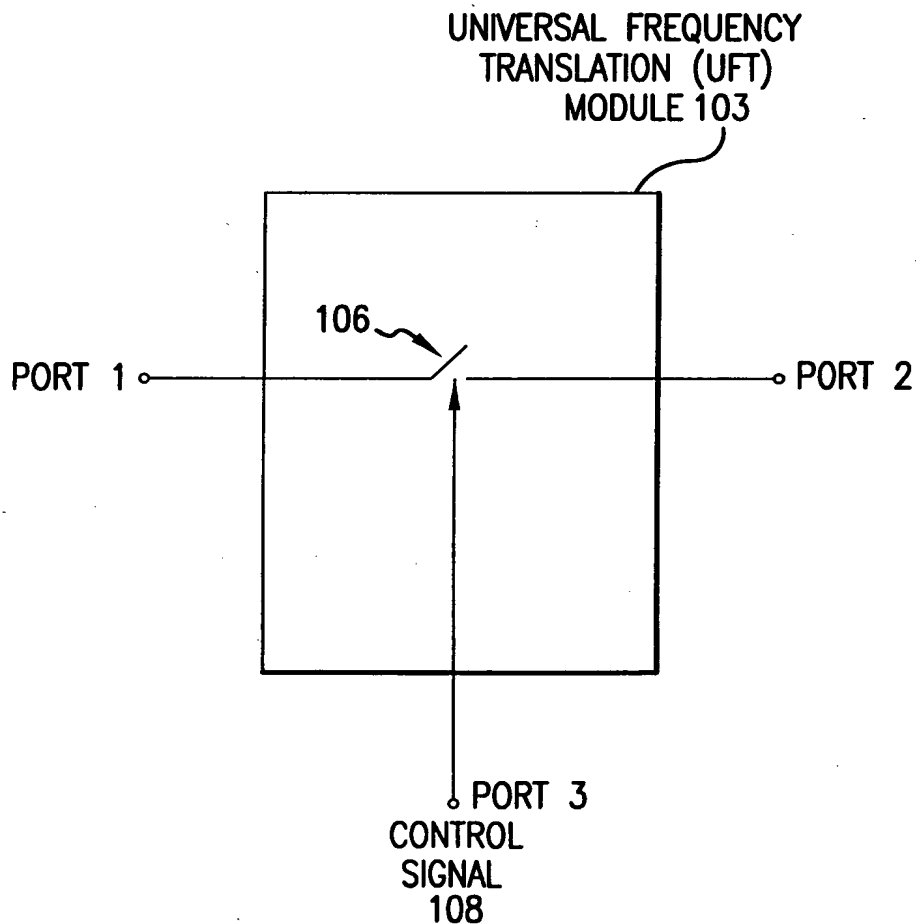


FIG. 1B

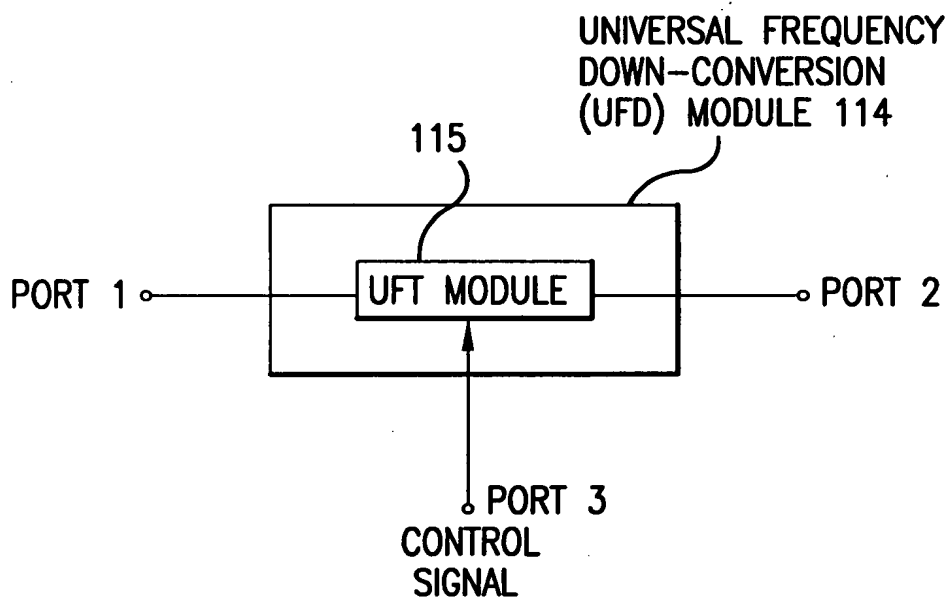


FIG. 1C

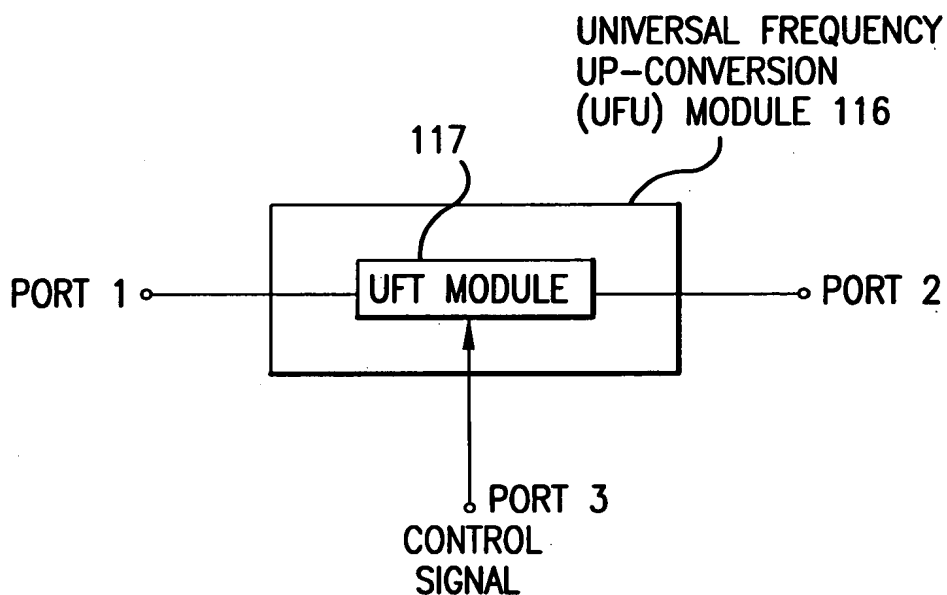
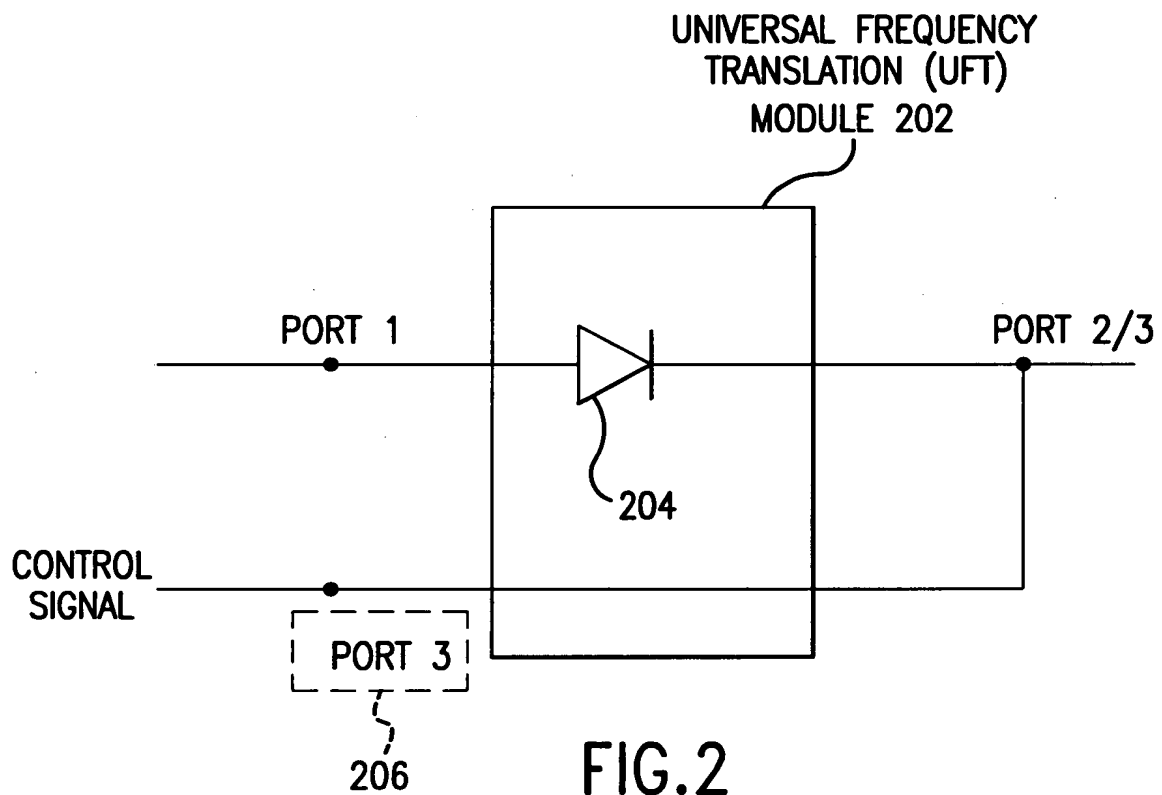


FIG. 1D



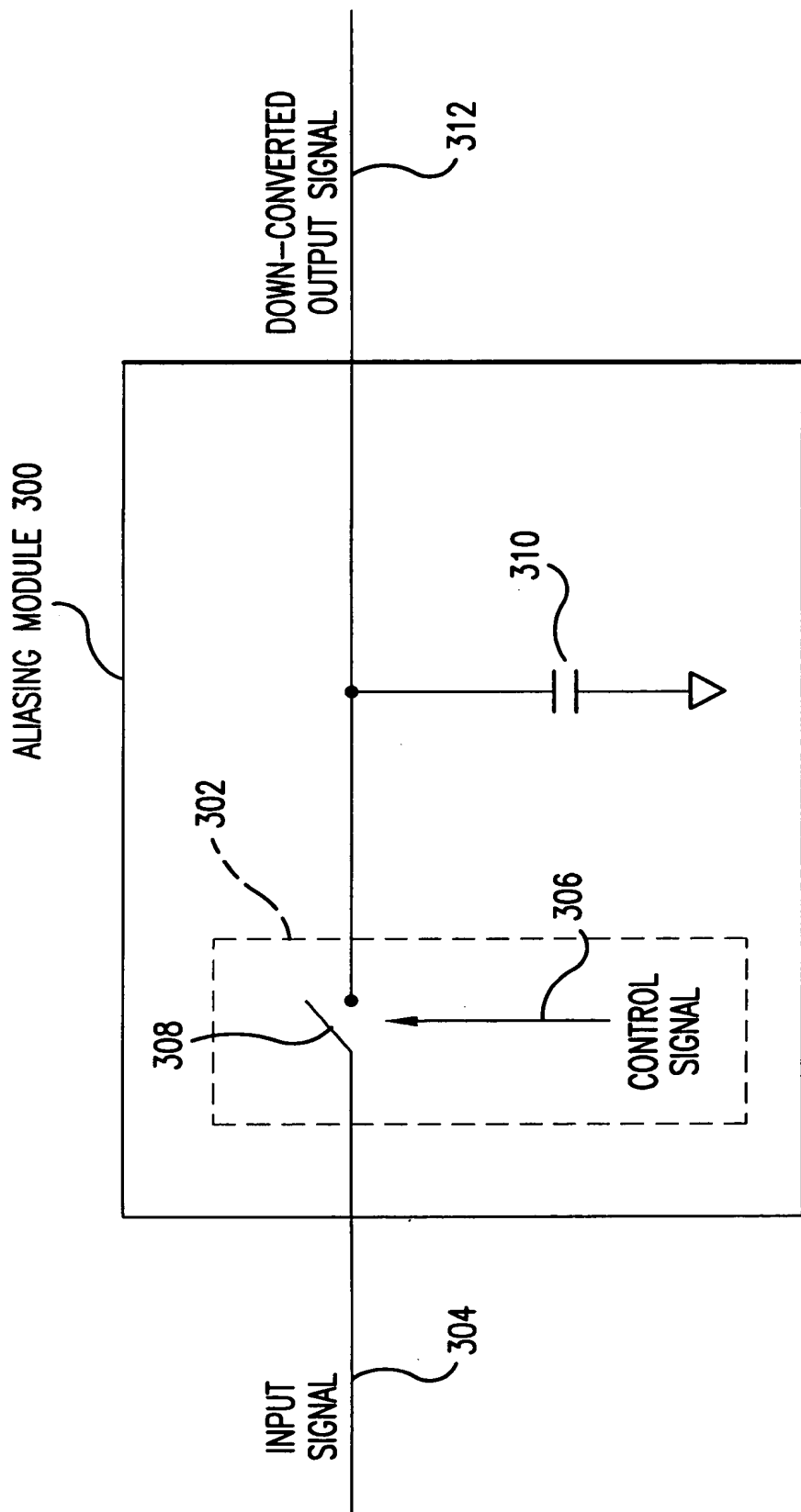


FIG.3A

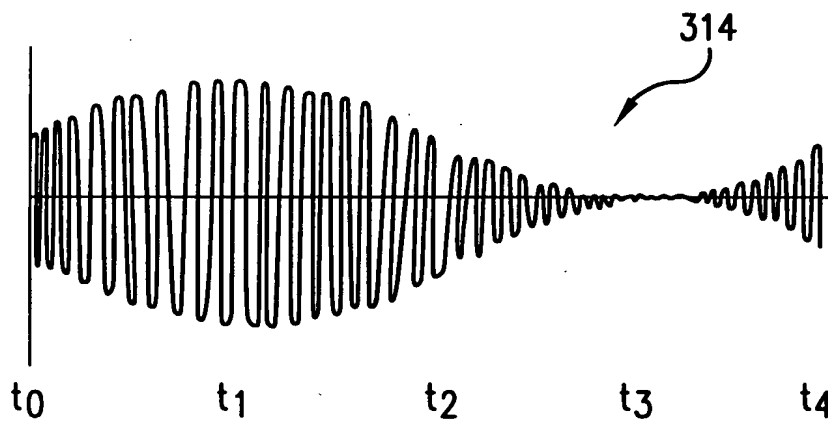


FIG. 3B

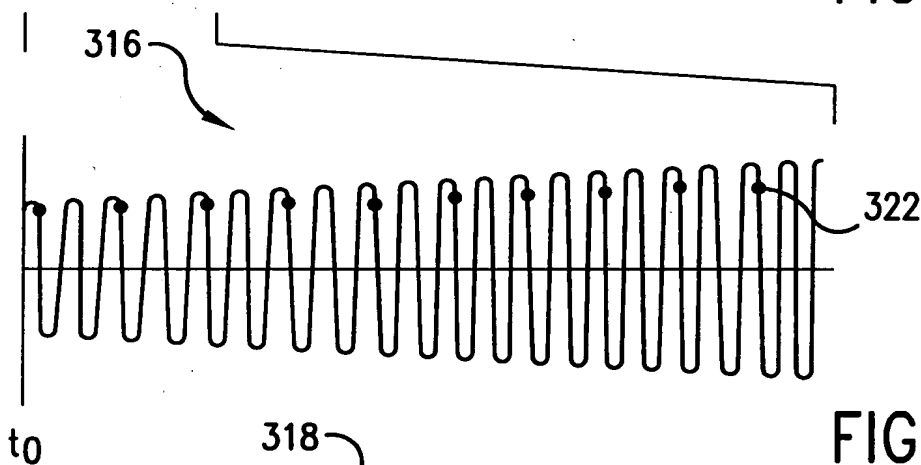


FIG. 3C

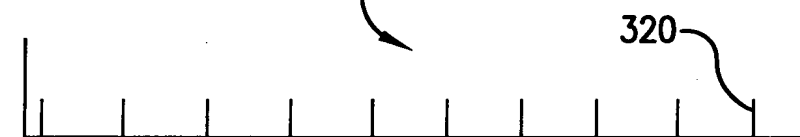


FIG. 3D

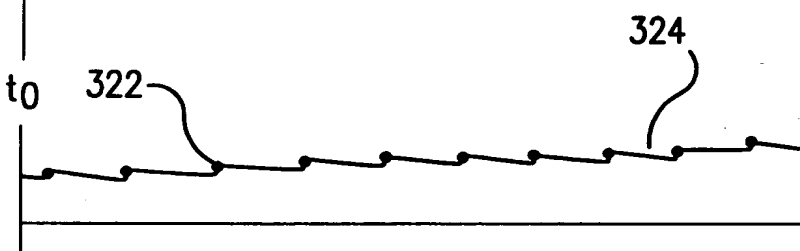


FIG. 3E

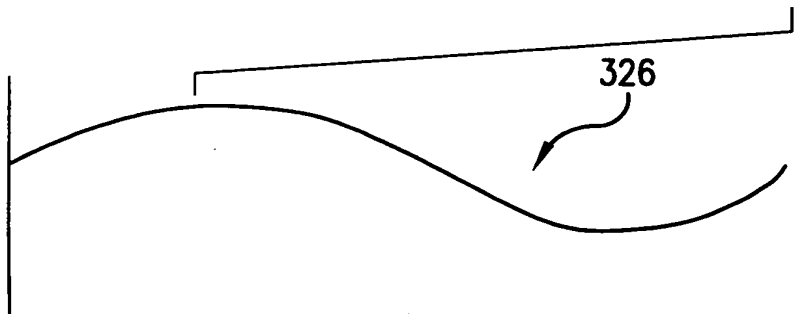


FIG. 3F



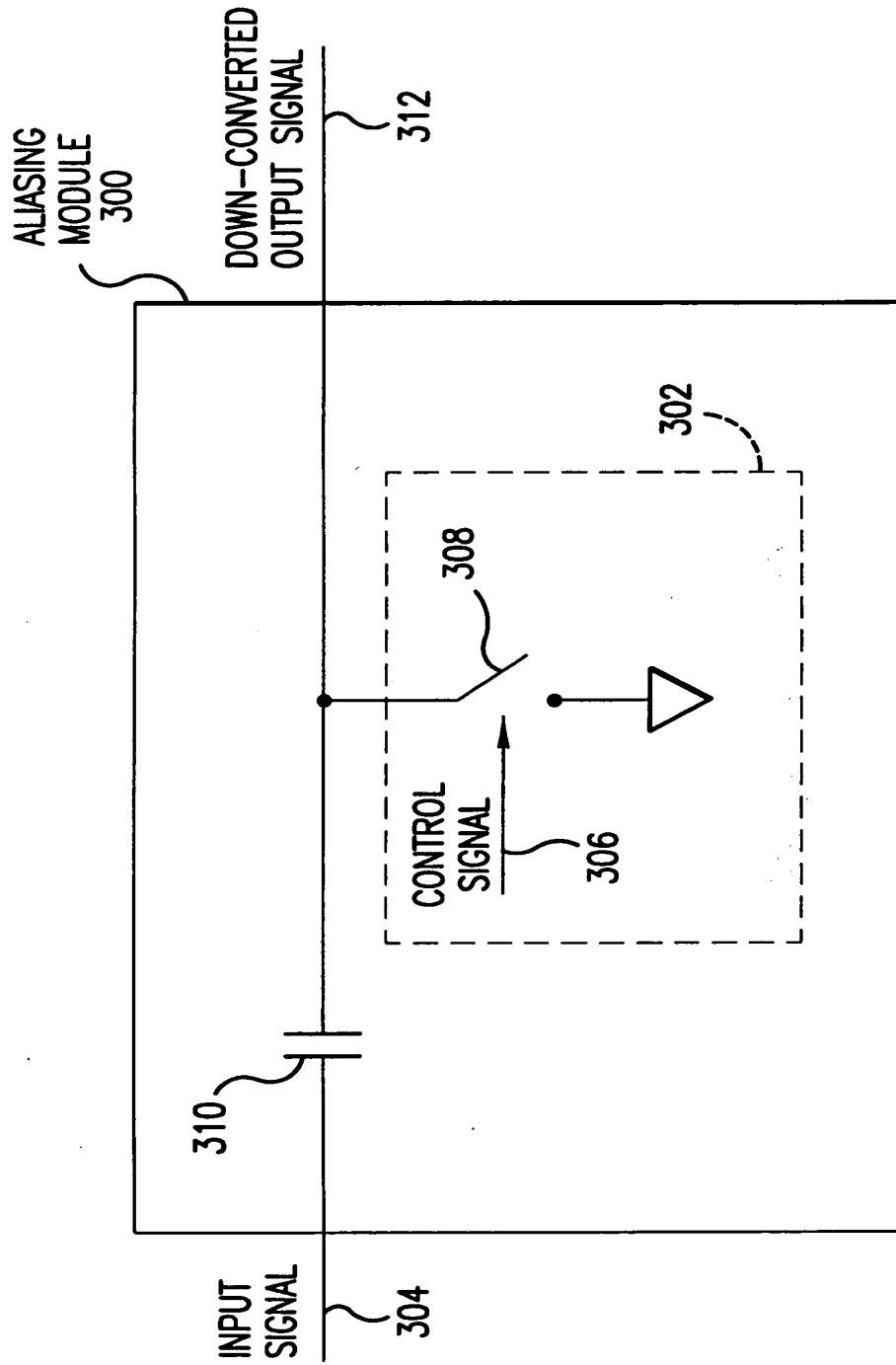


FIG.3G

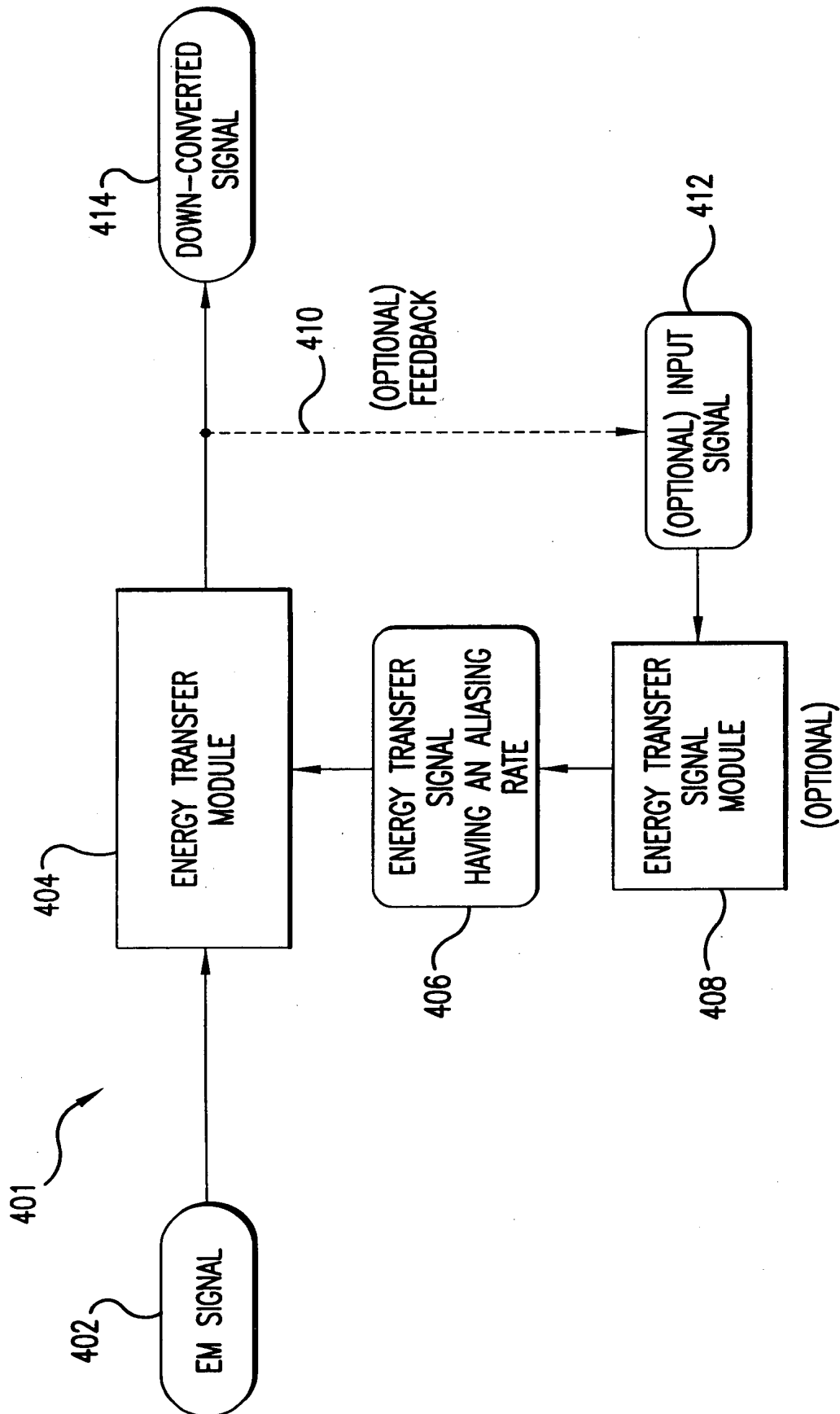
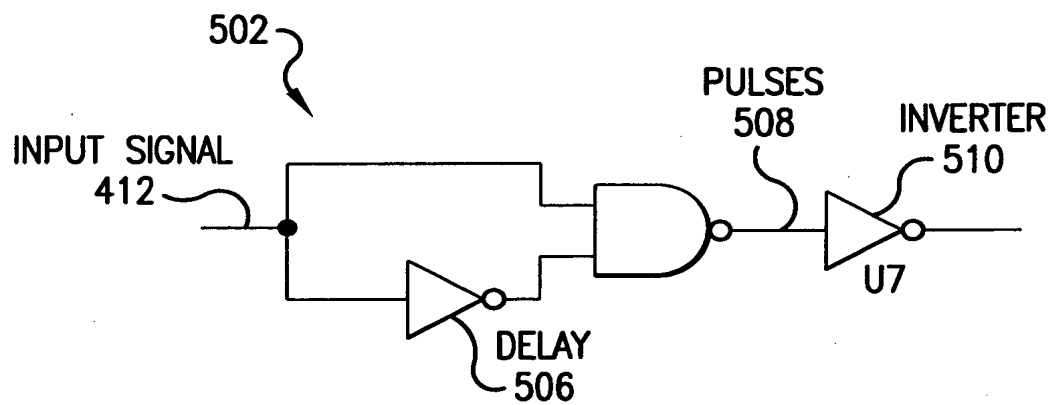


FIG.4

**FIG.5**

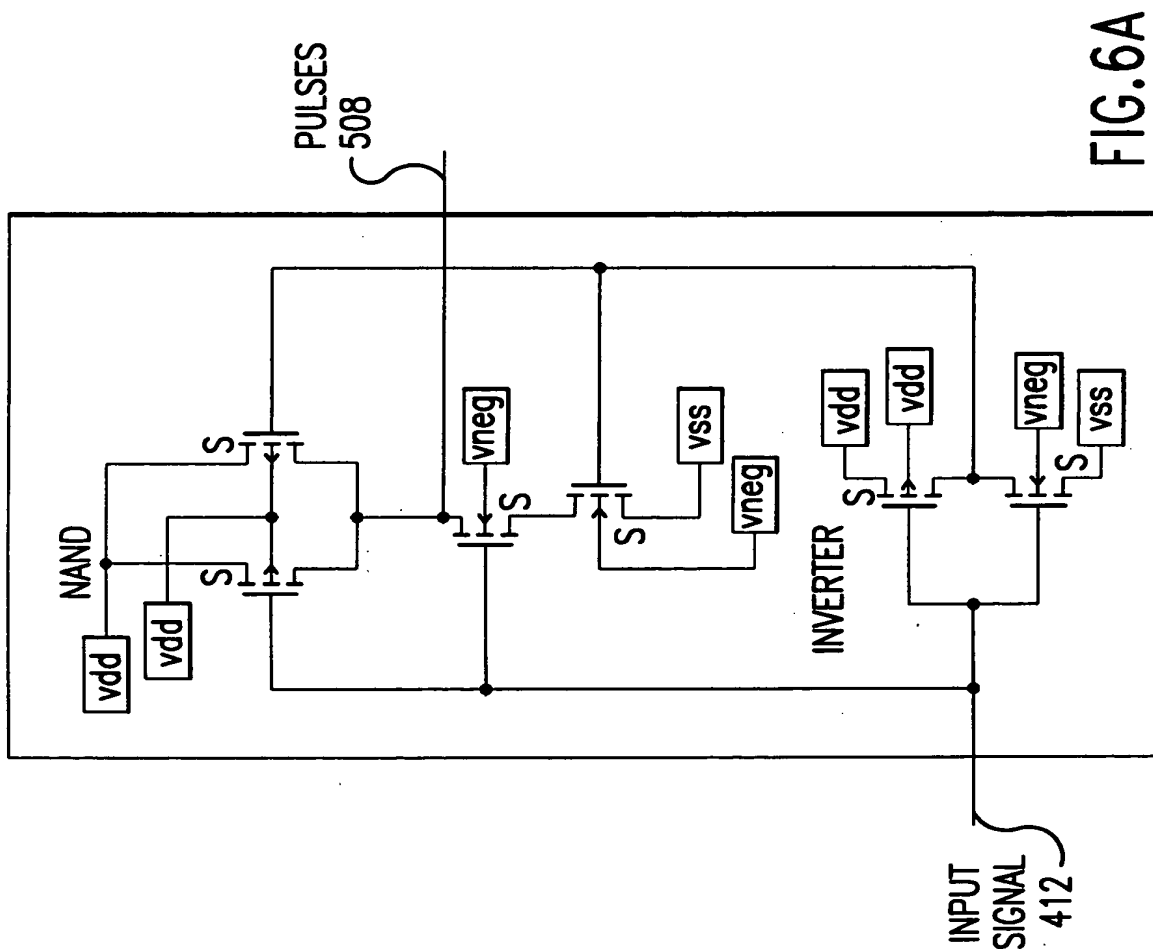


FIG. 6A

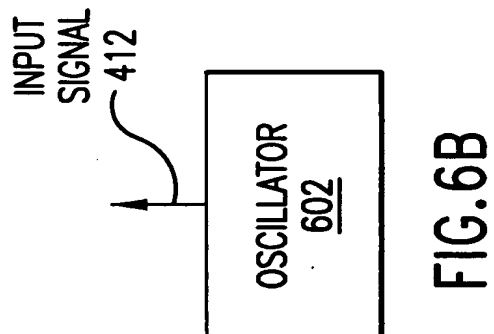


FIG. 6B

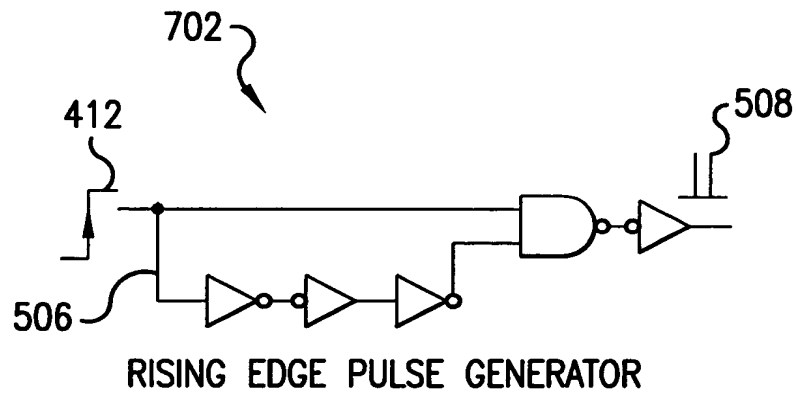


FIG.7A

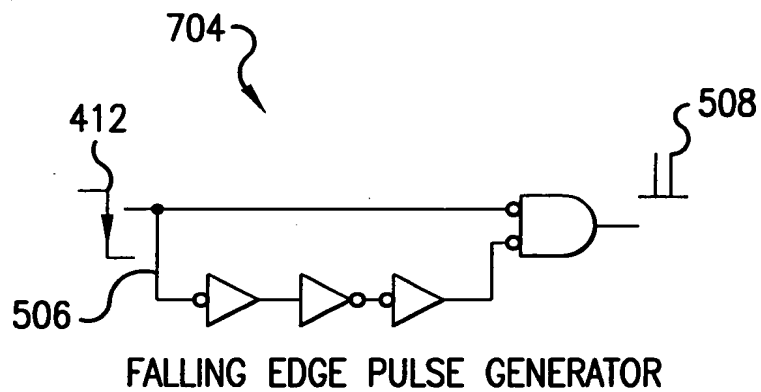


FIG.7B

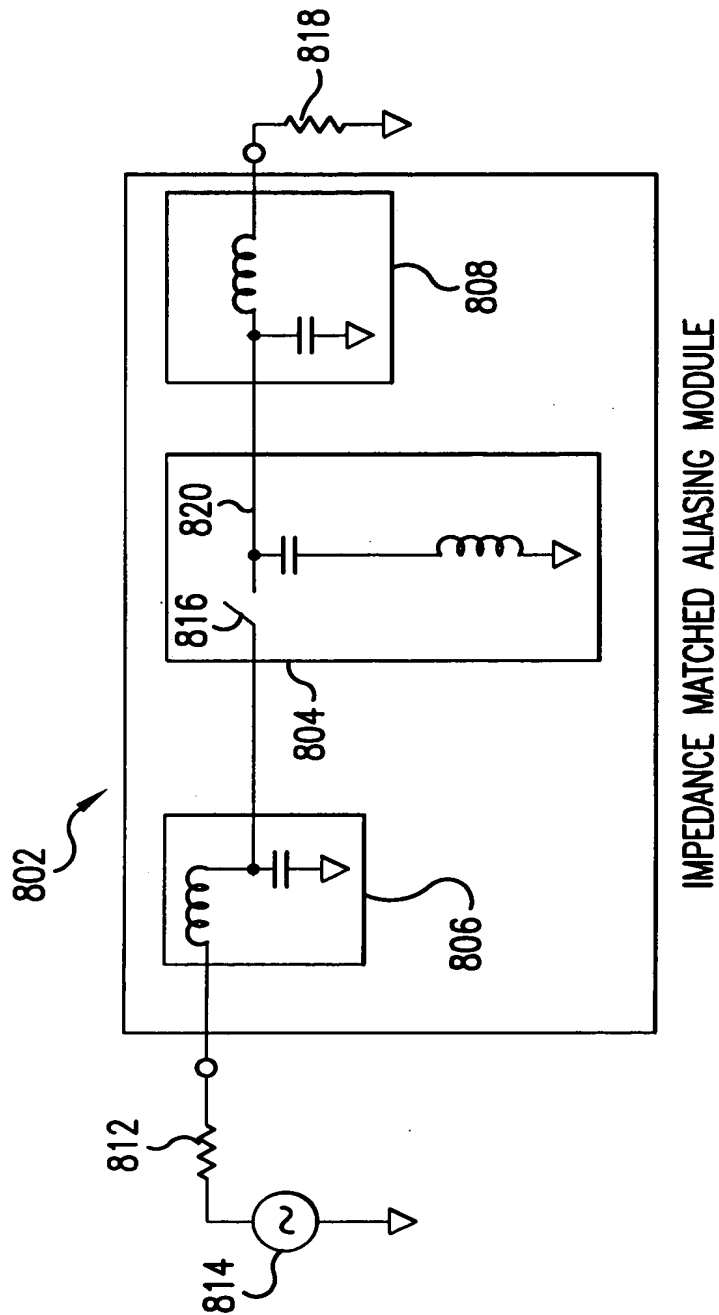
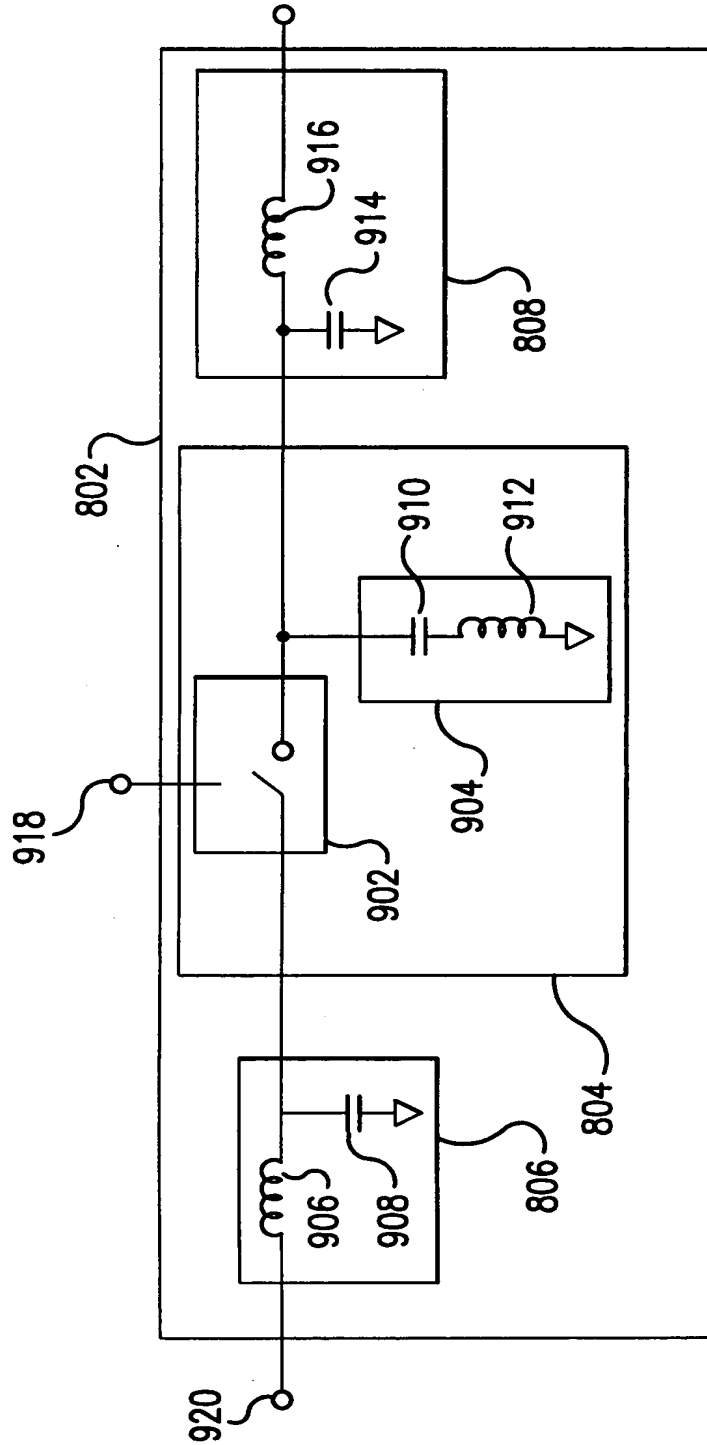


FIG.8



ALIASING MODULE

FIG. 9

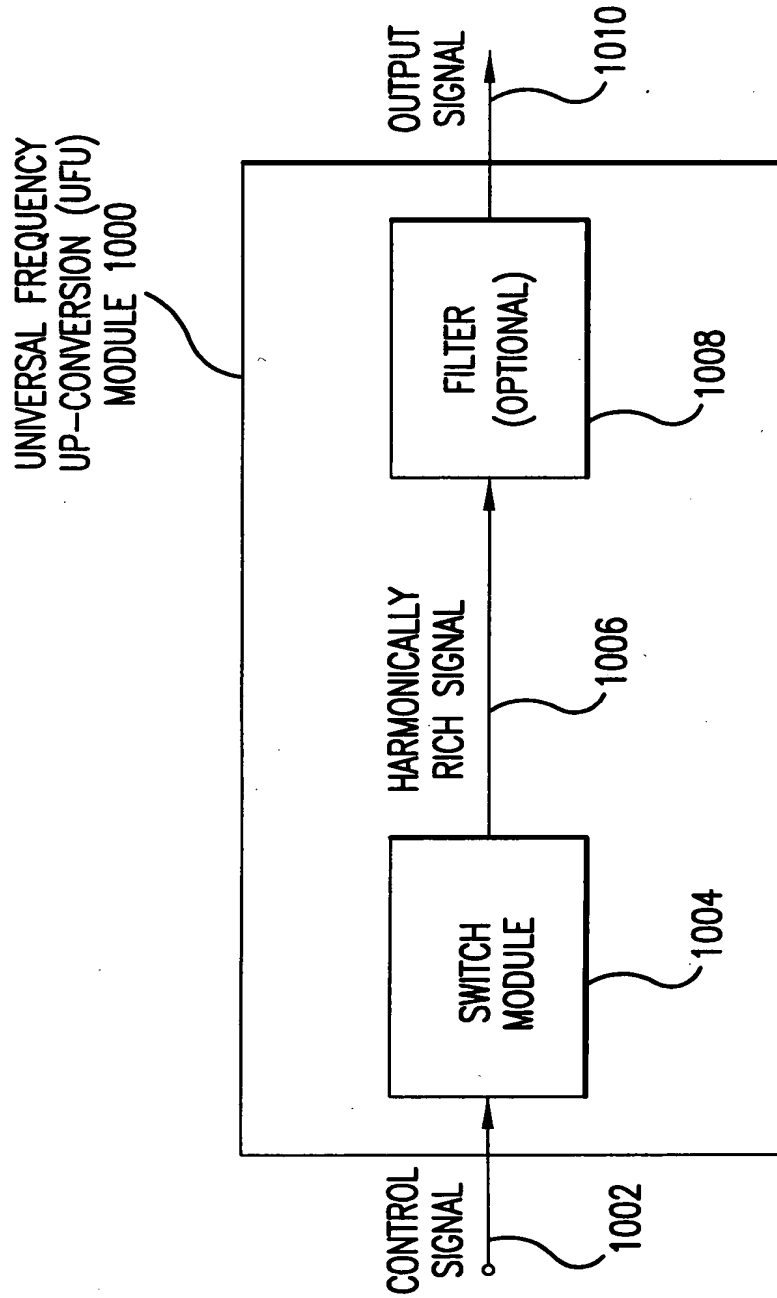


FIG.10



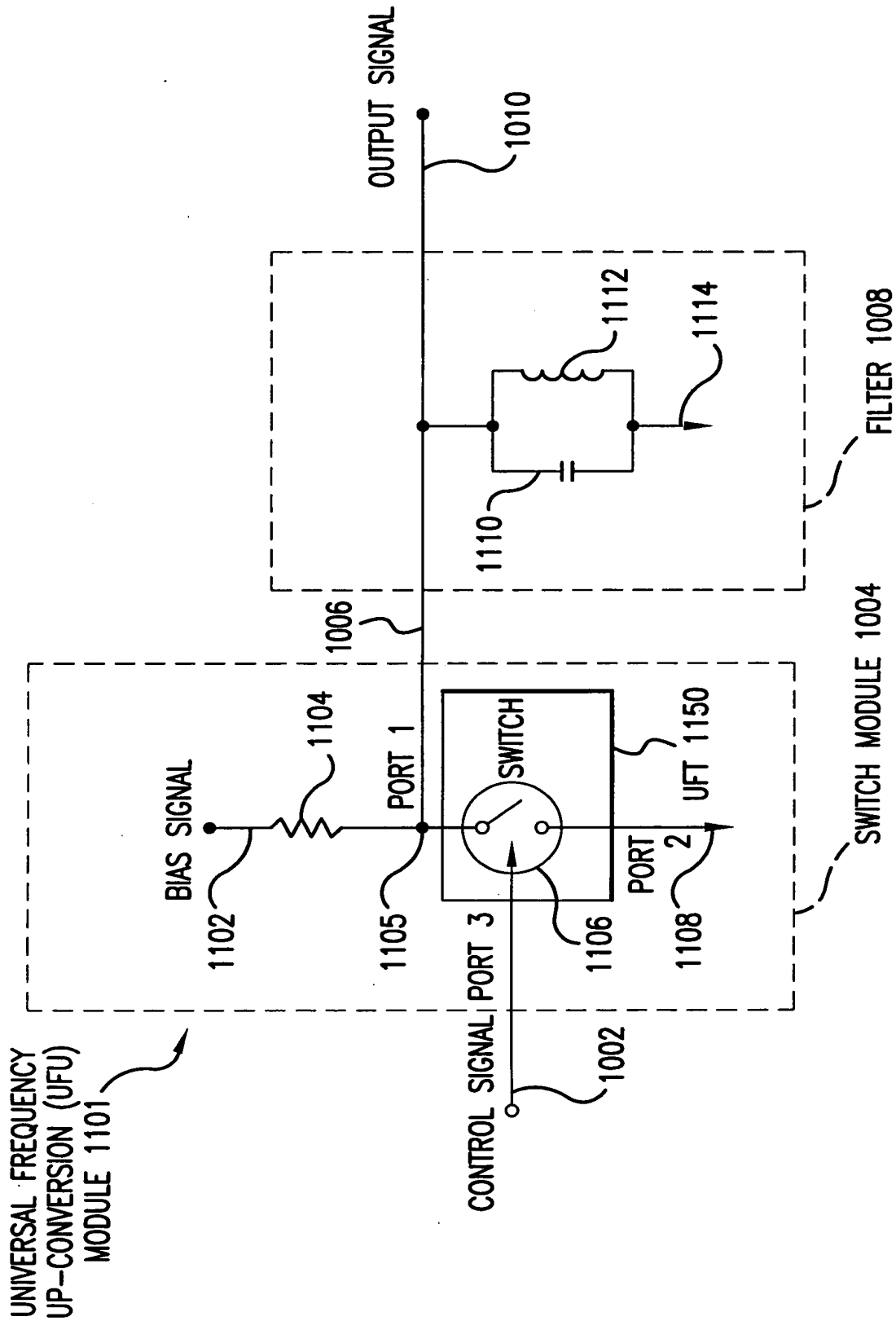


FIG.11

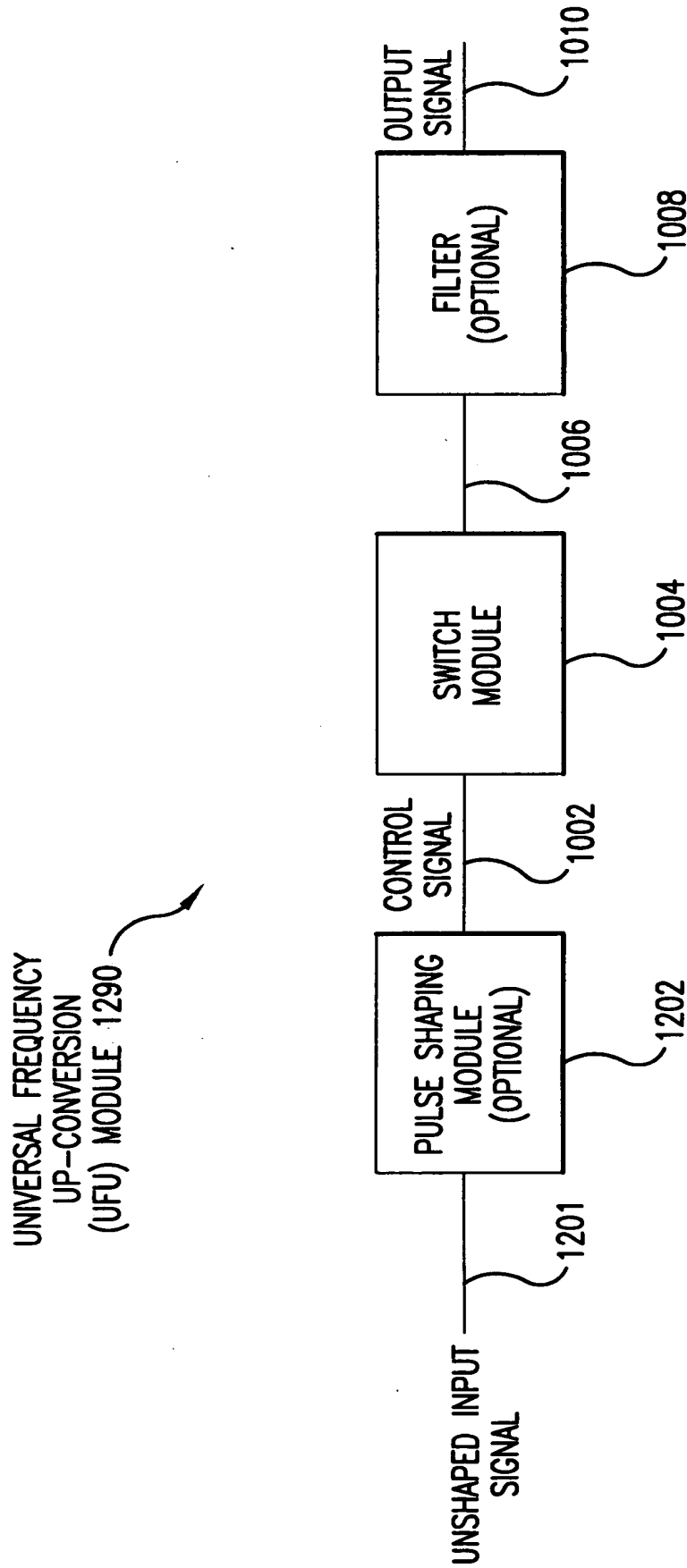
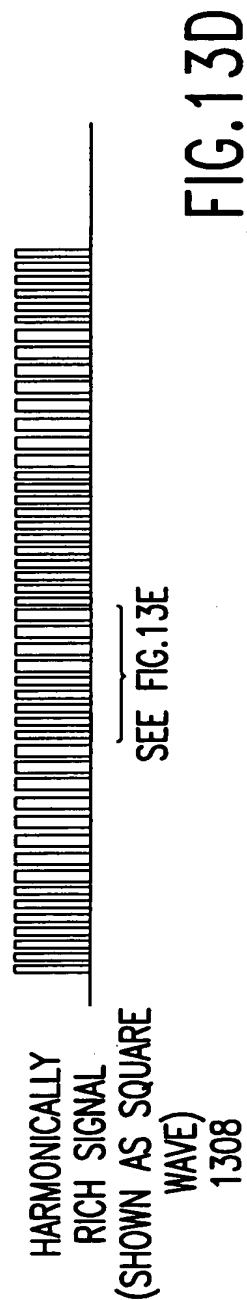
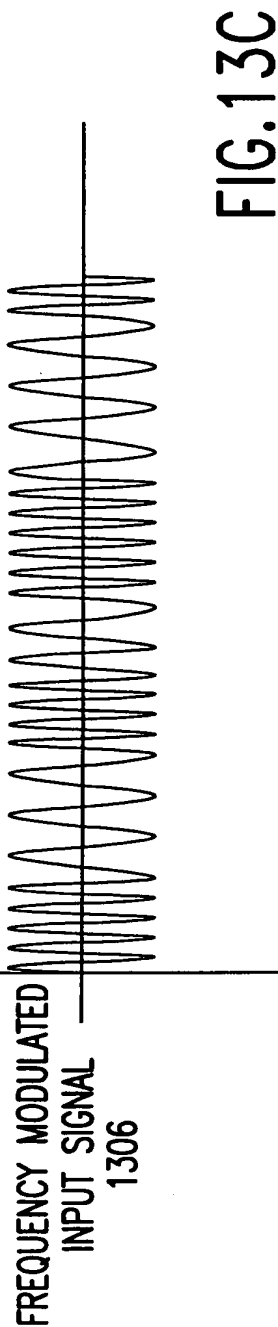
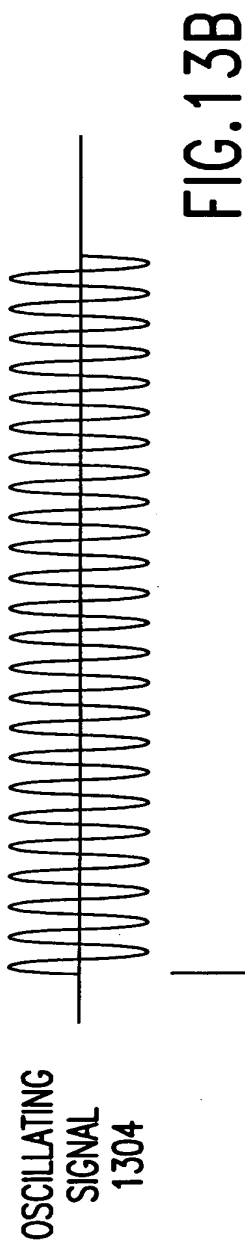
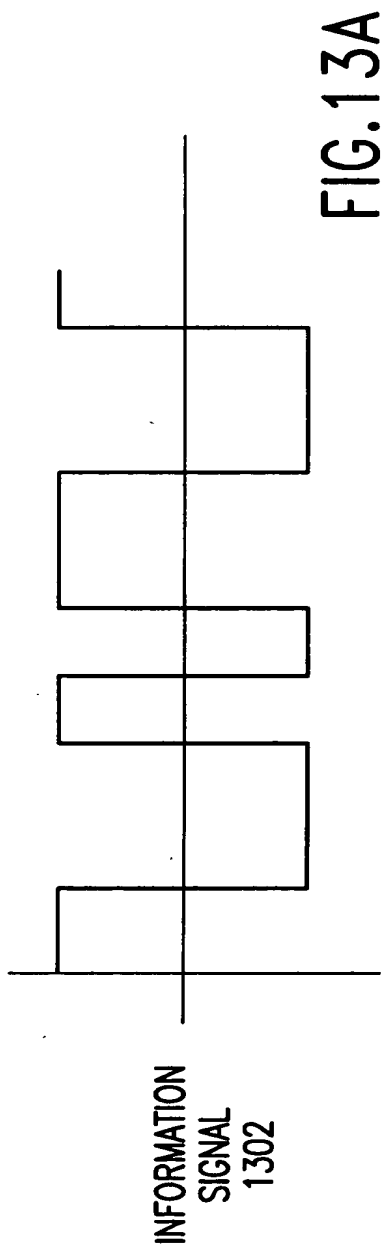
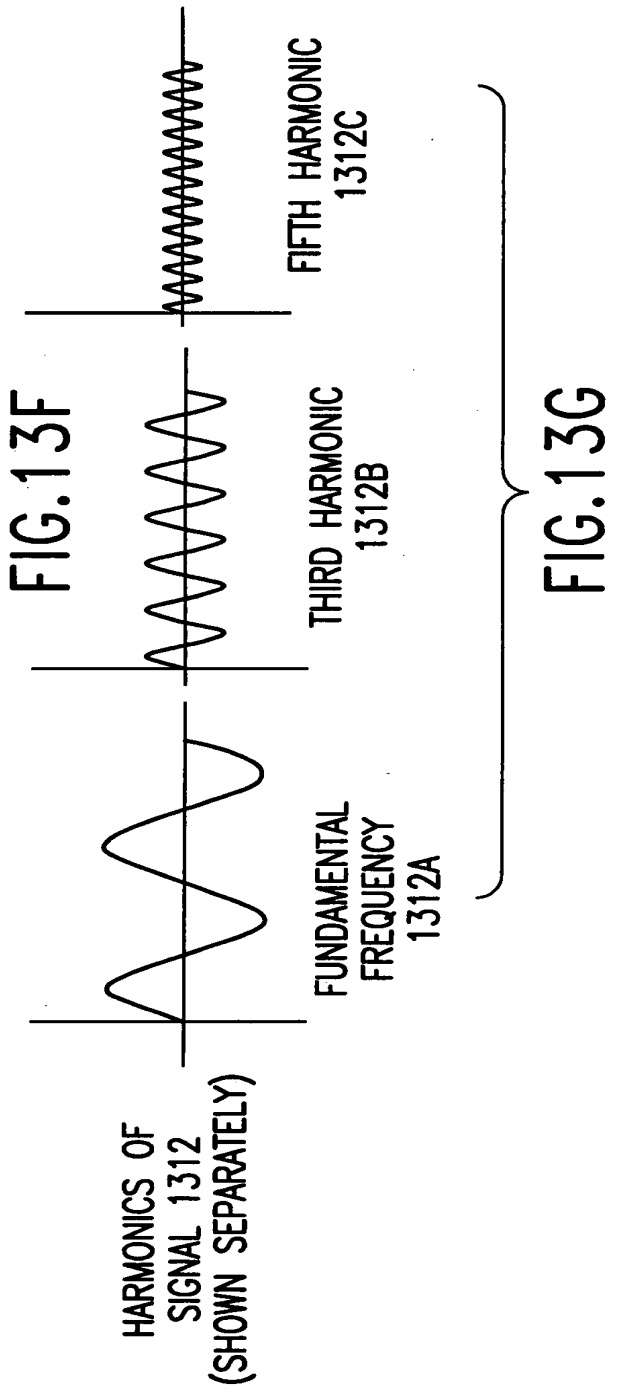
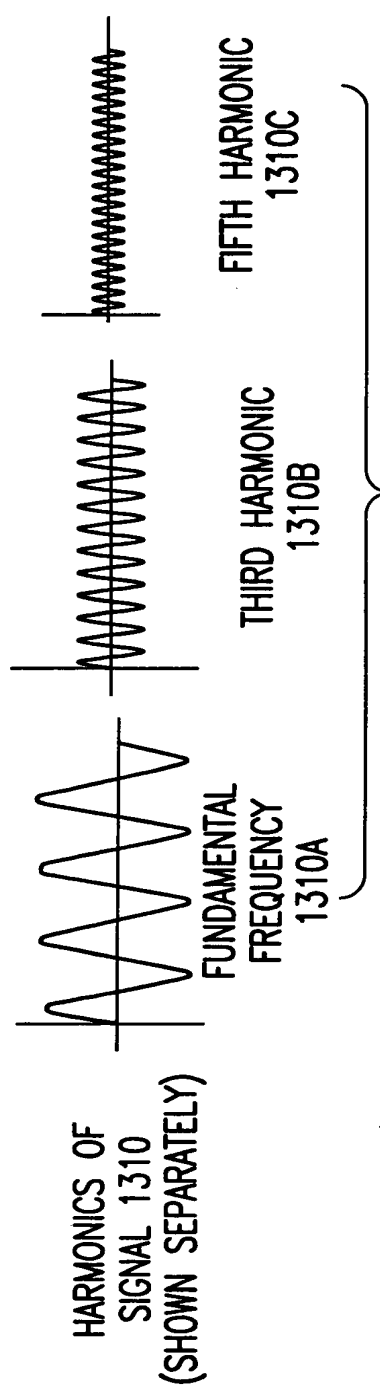
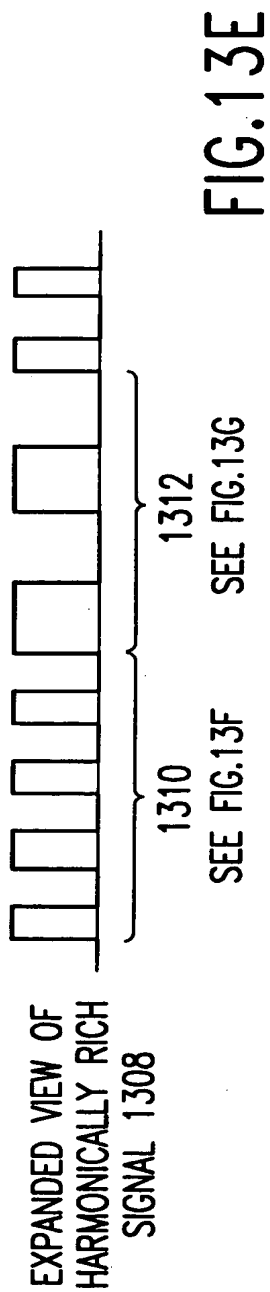


FIG.12





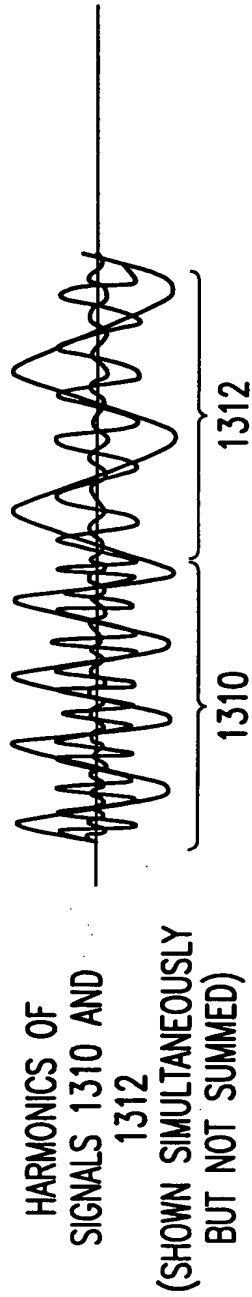


FIG. 13H

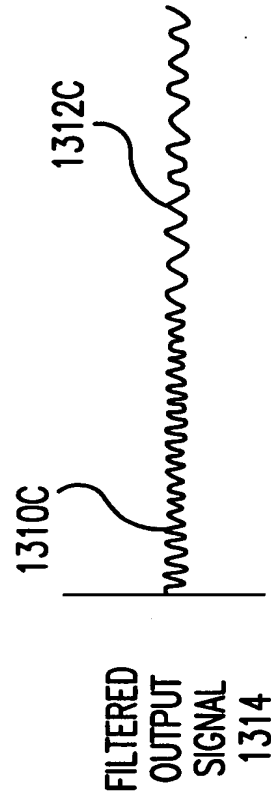


FIG. 13I

UNIFIED DOWNCONVERTING AND  
 FILTERING (UDF) MODULE 1402

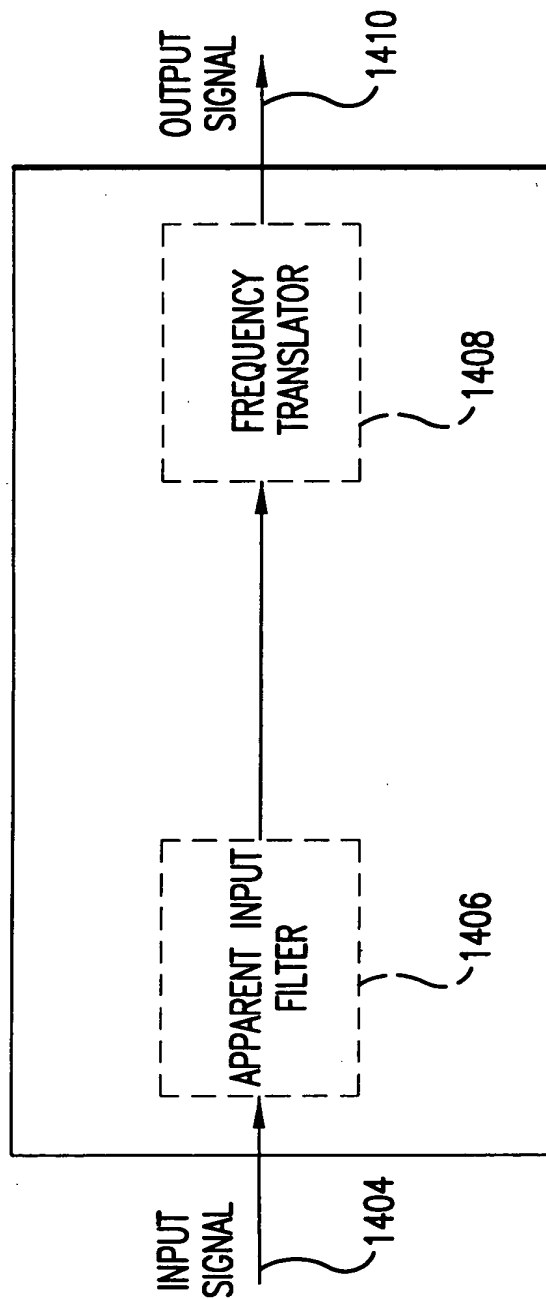


FIG.14

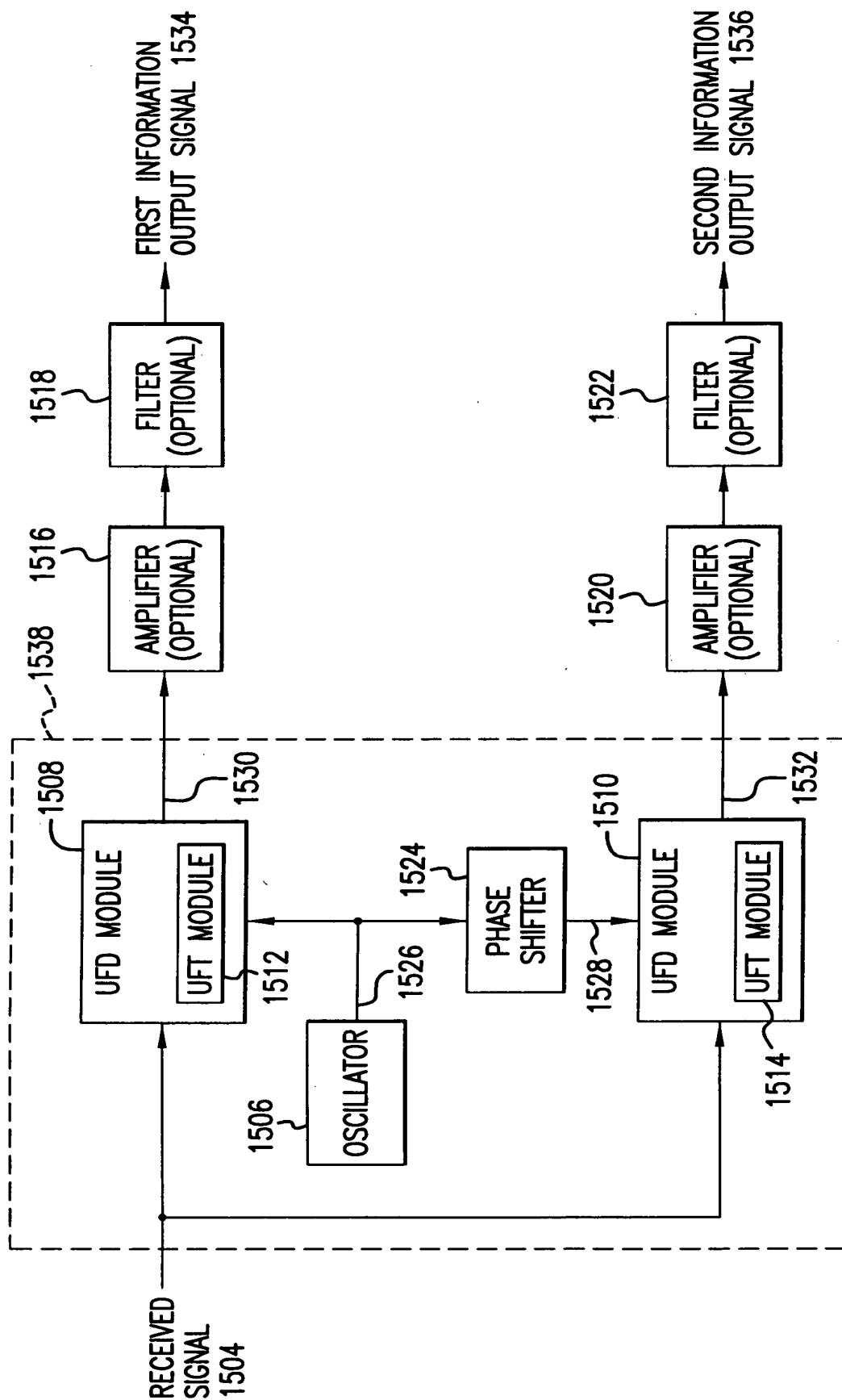
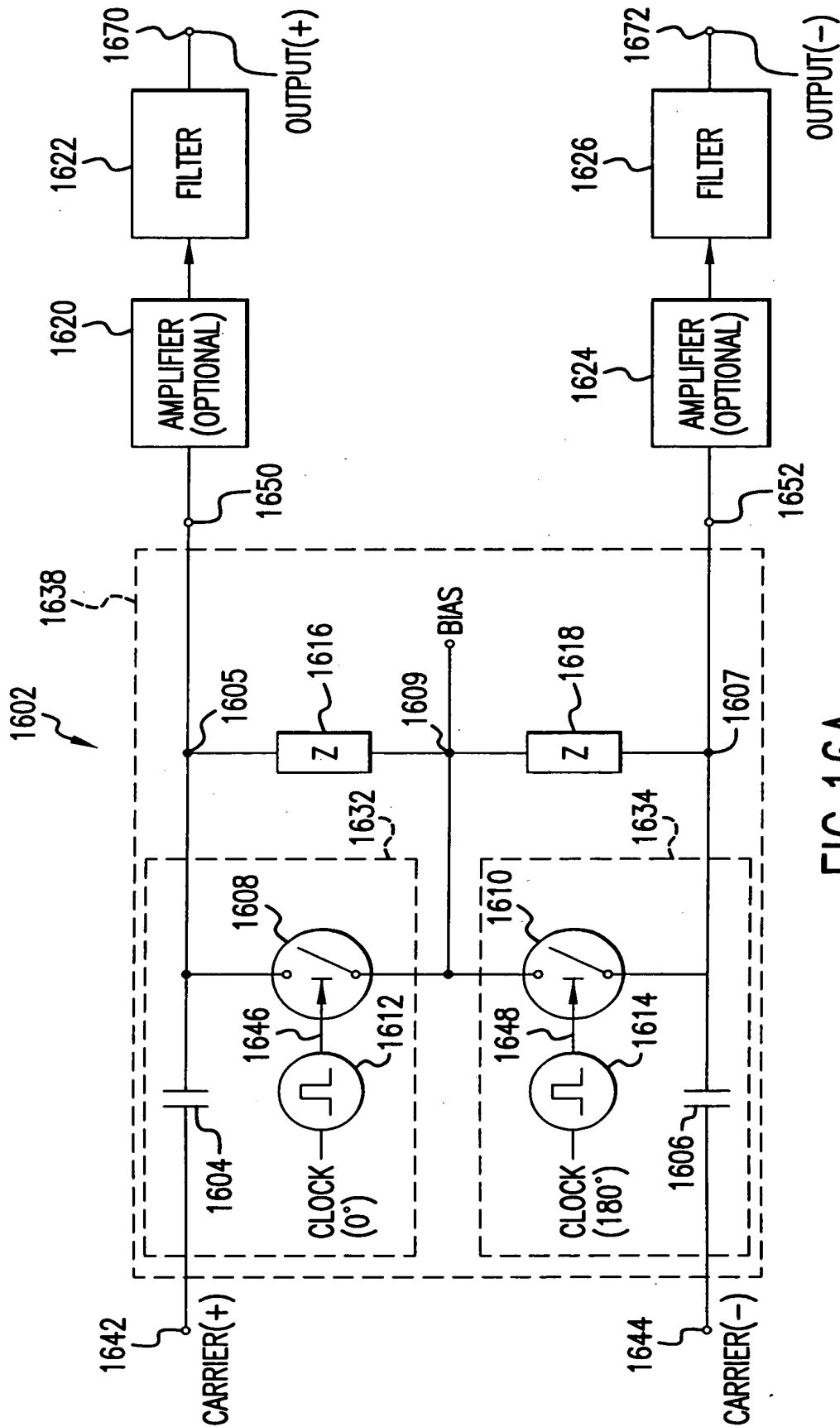


FIG. 15





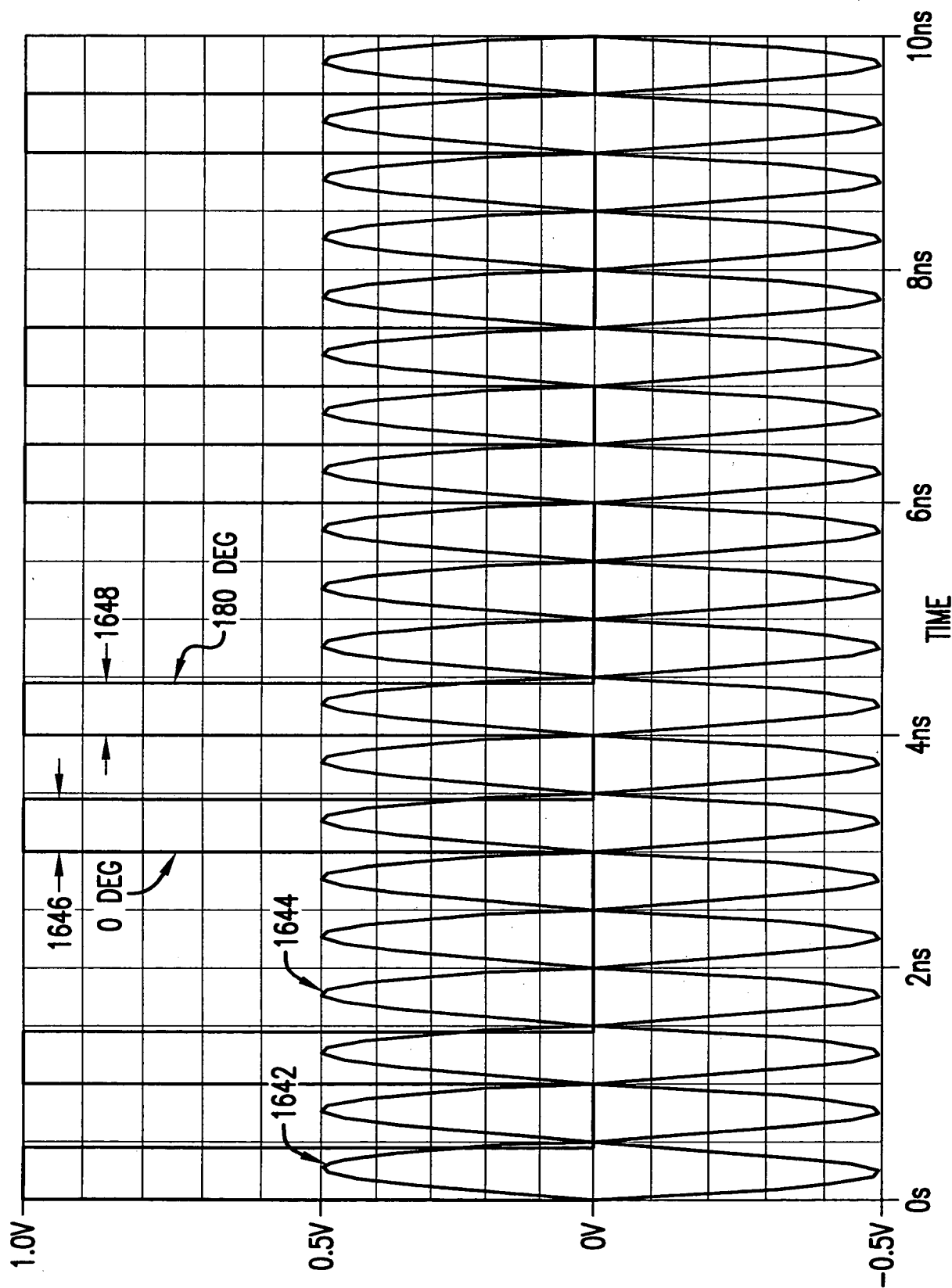


FIG. 16B

Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals

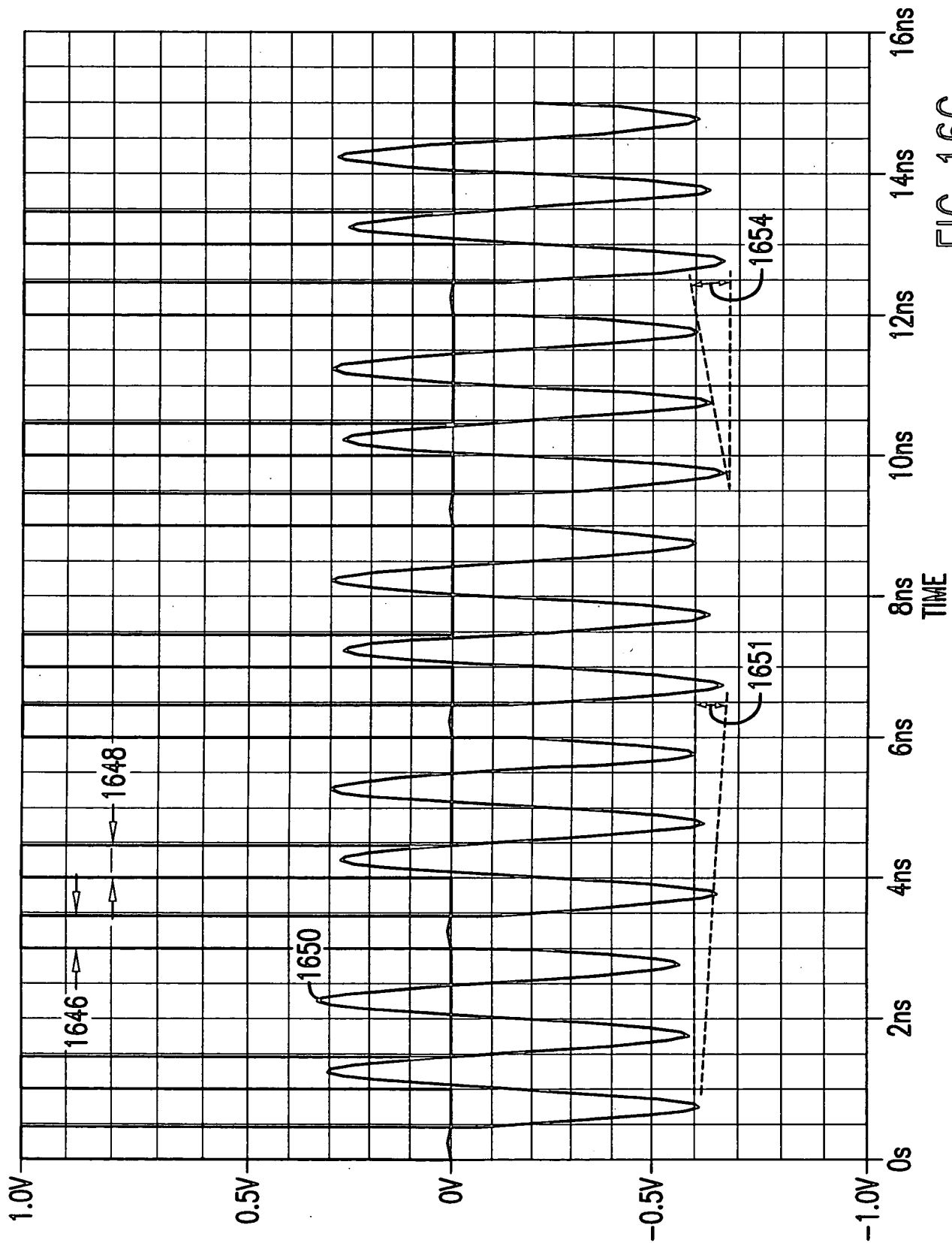


FIG. 16C

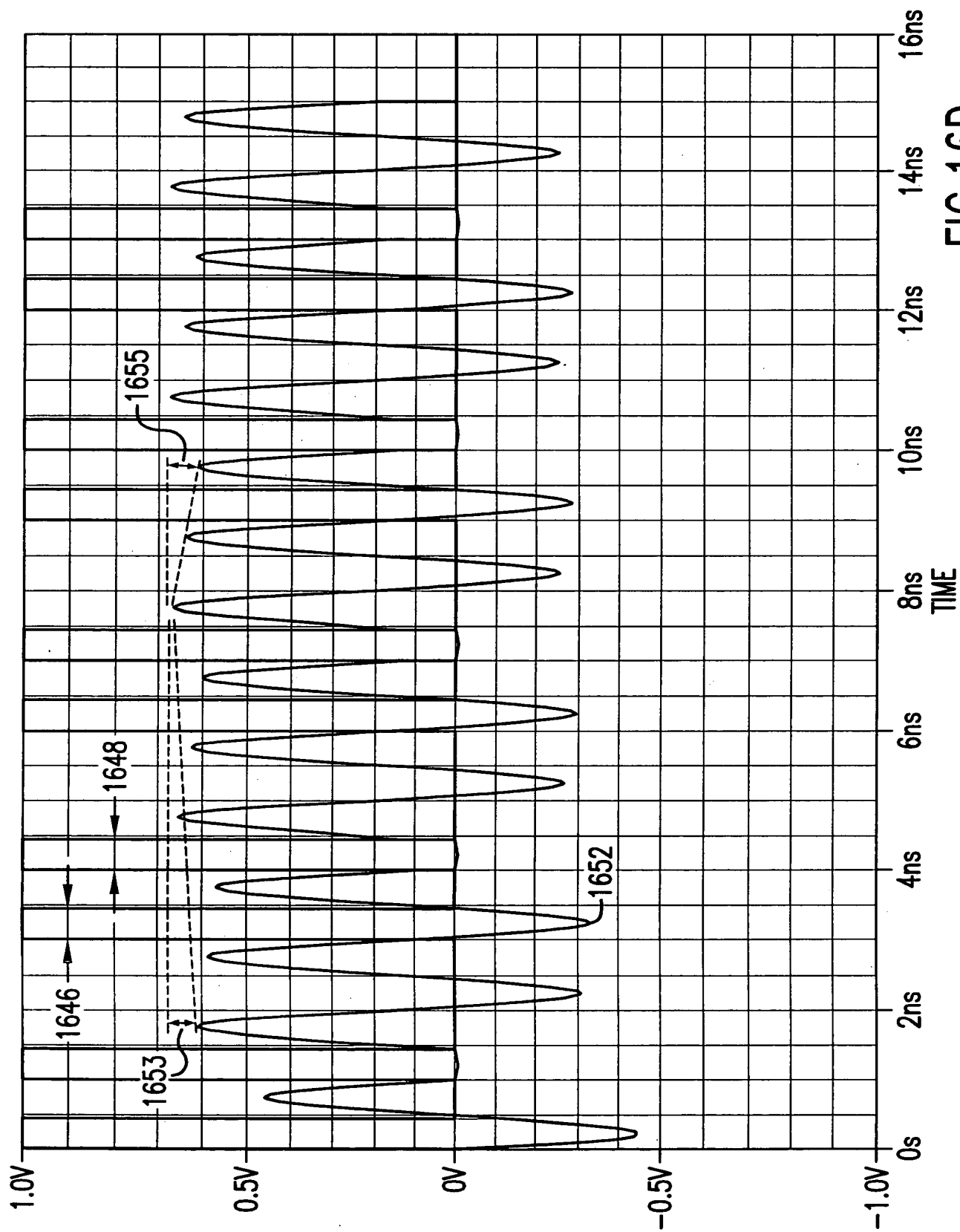


FIG.16D

Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals

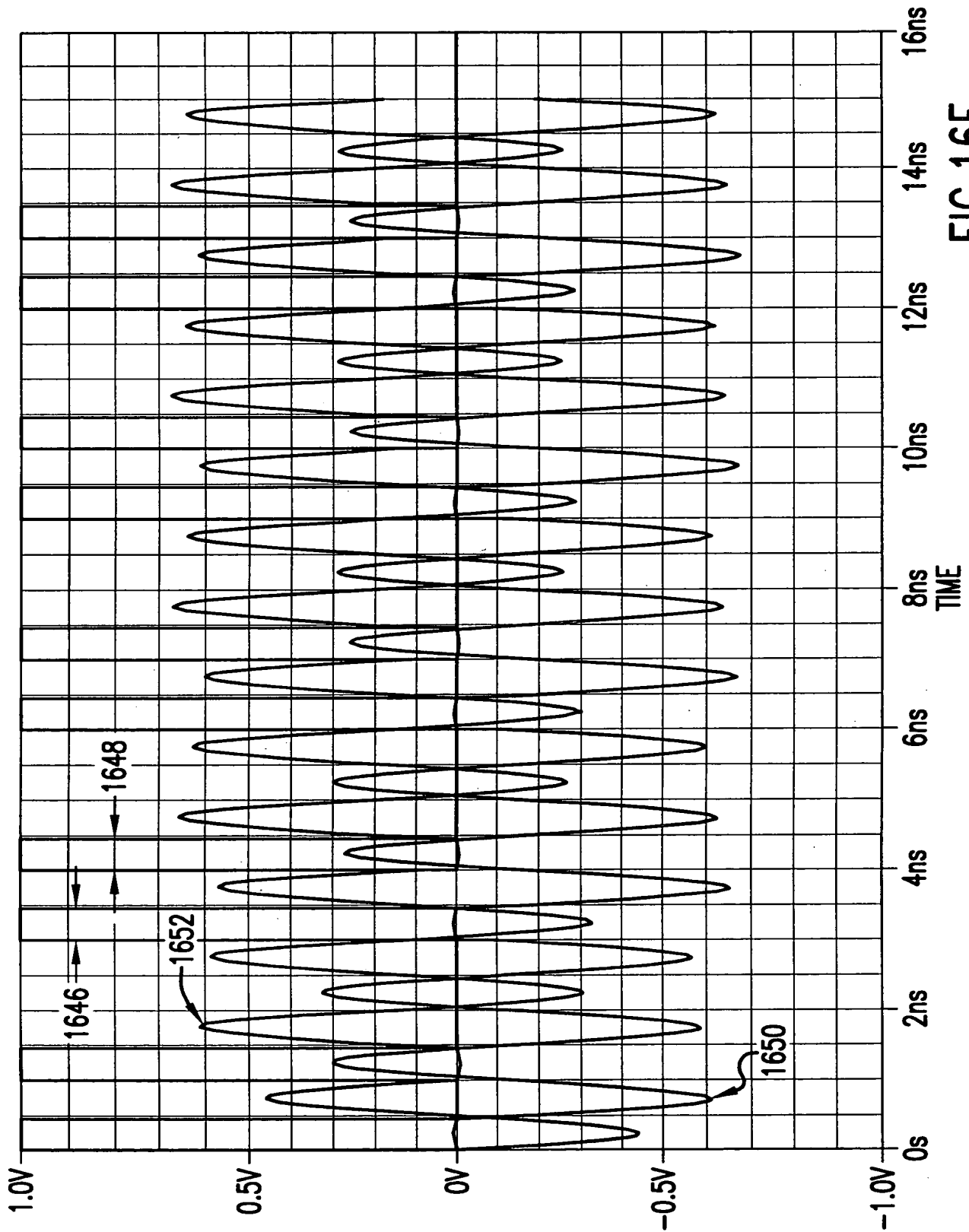


FIG.16E

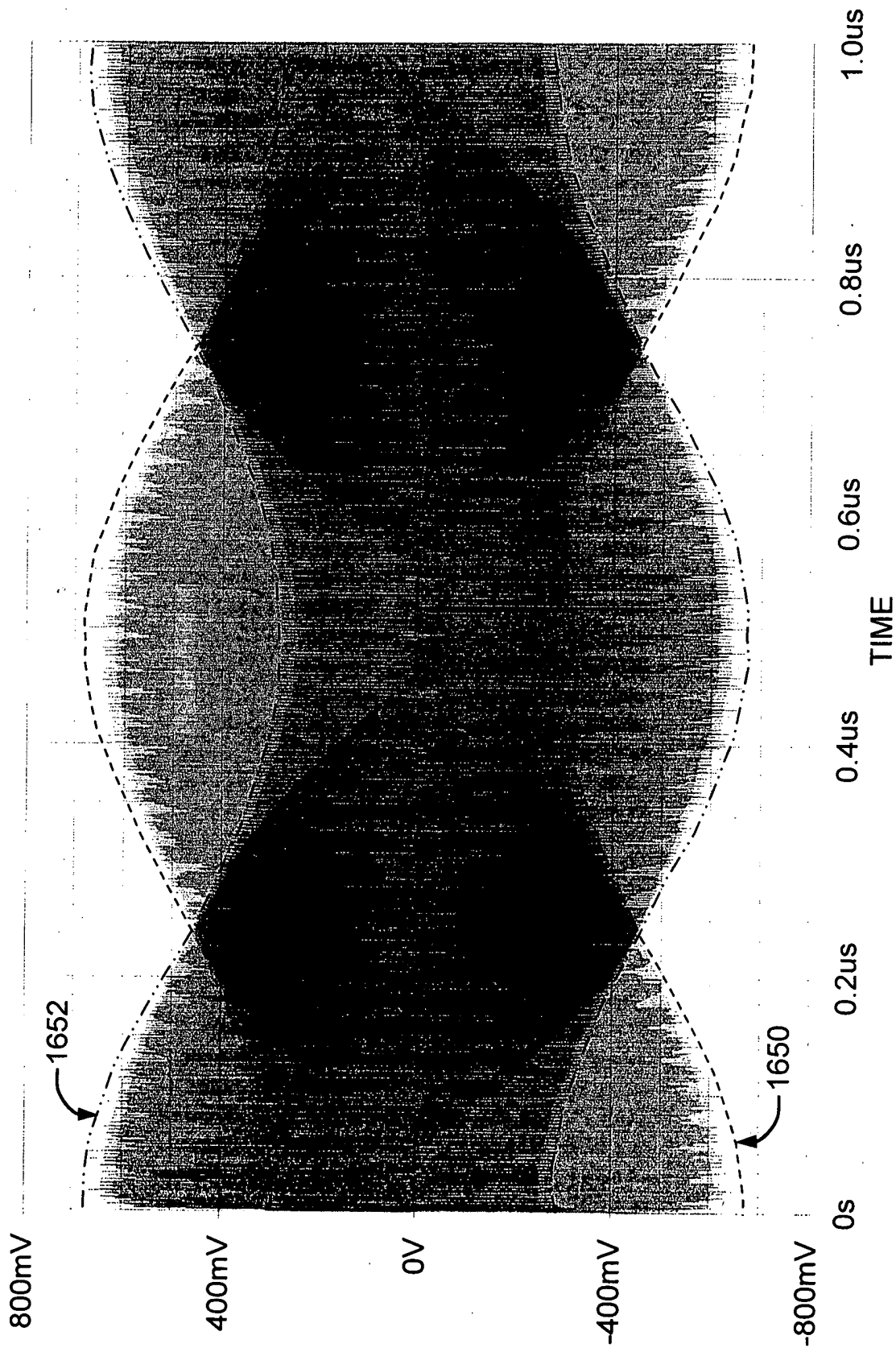
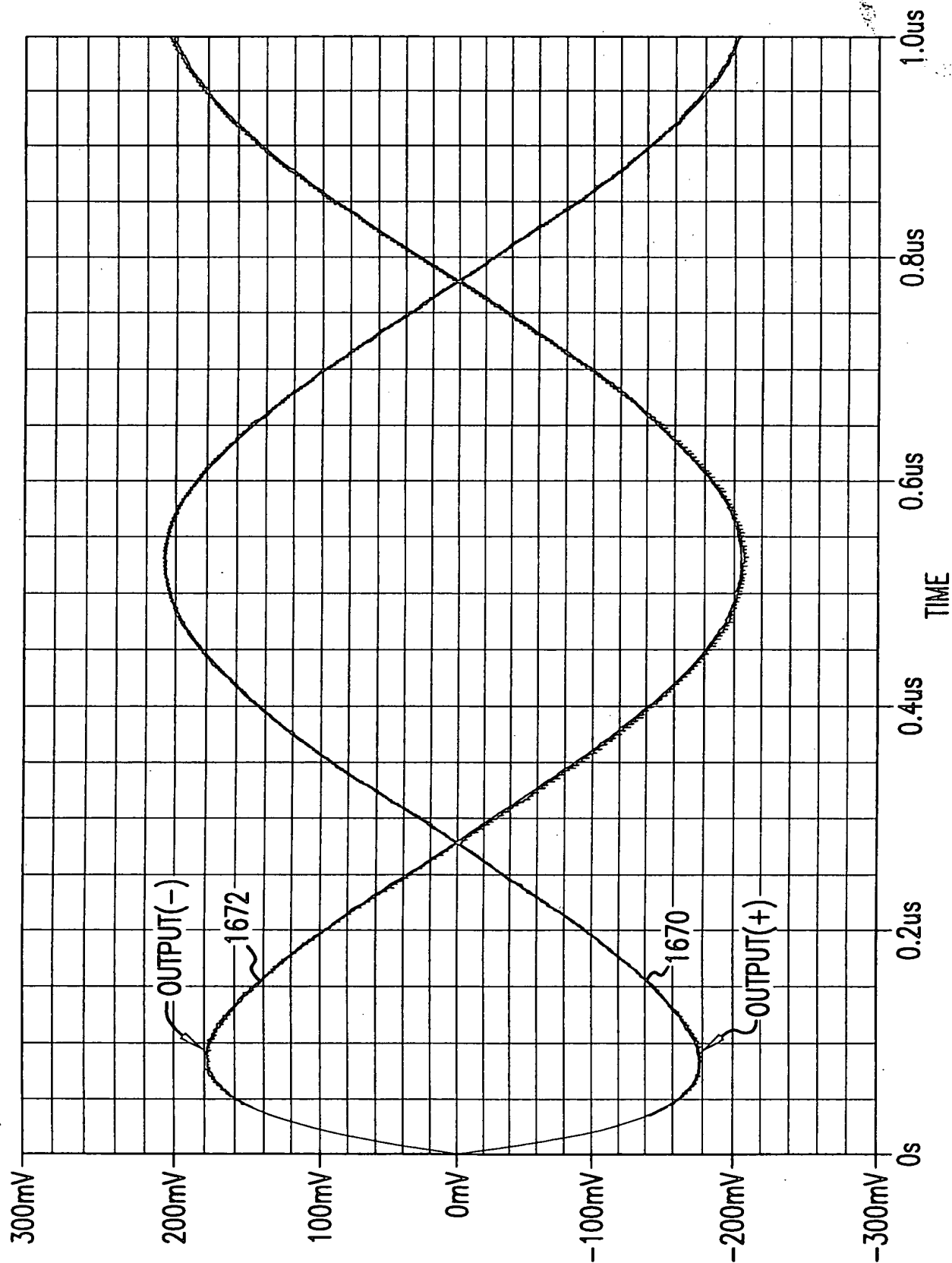
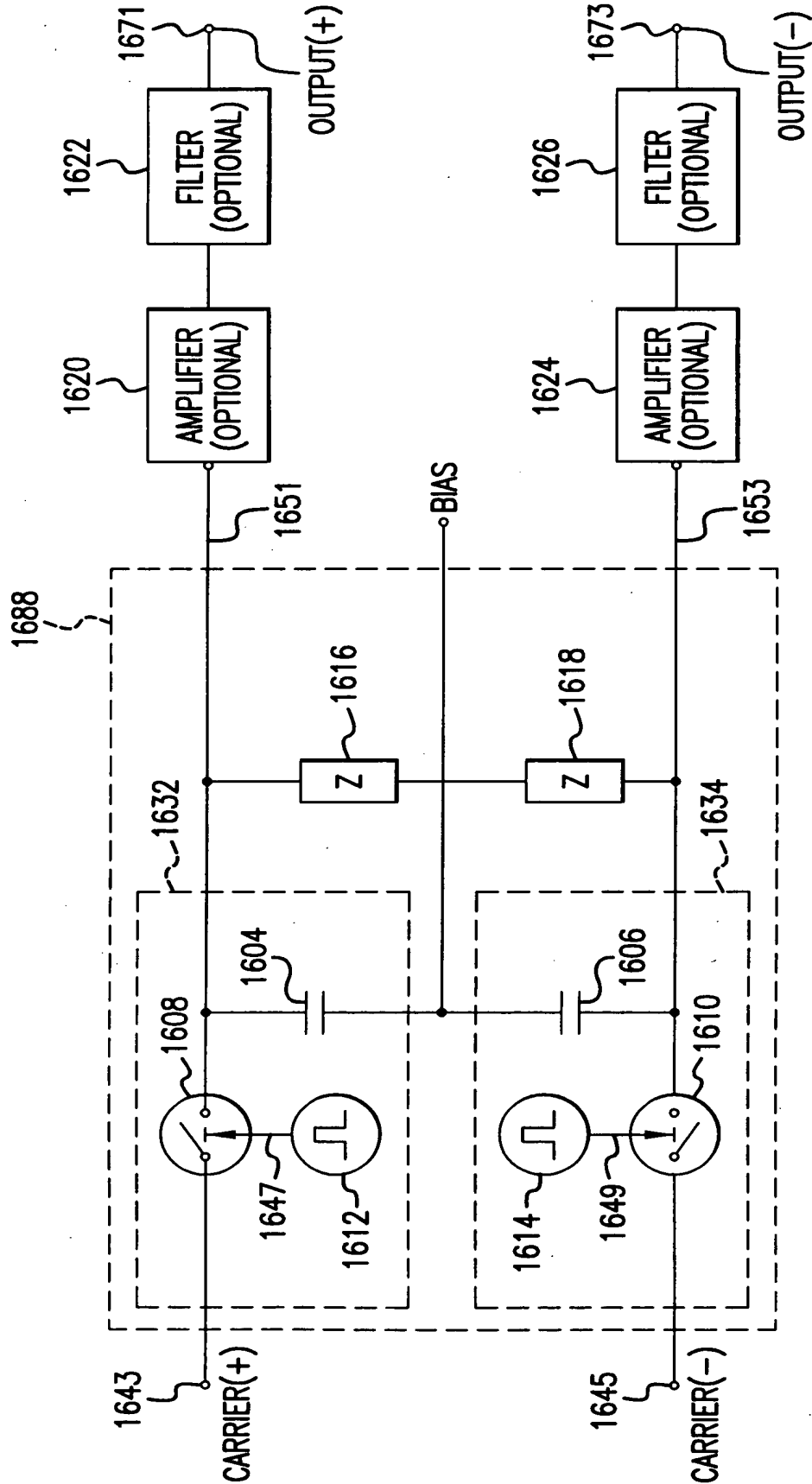


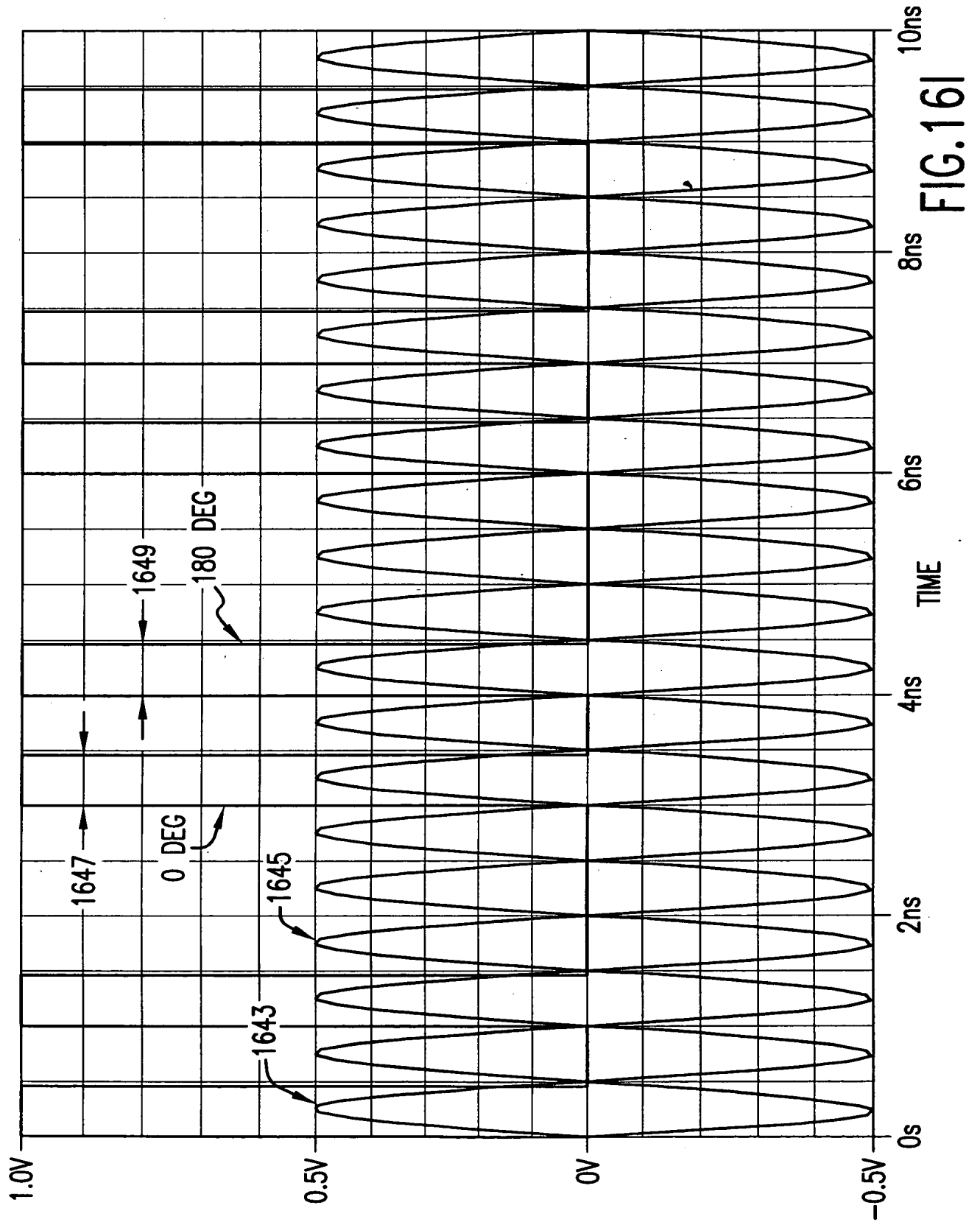
FIG.16F

Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals





Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals





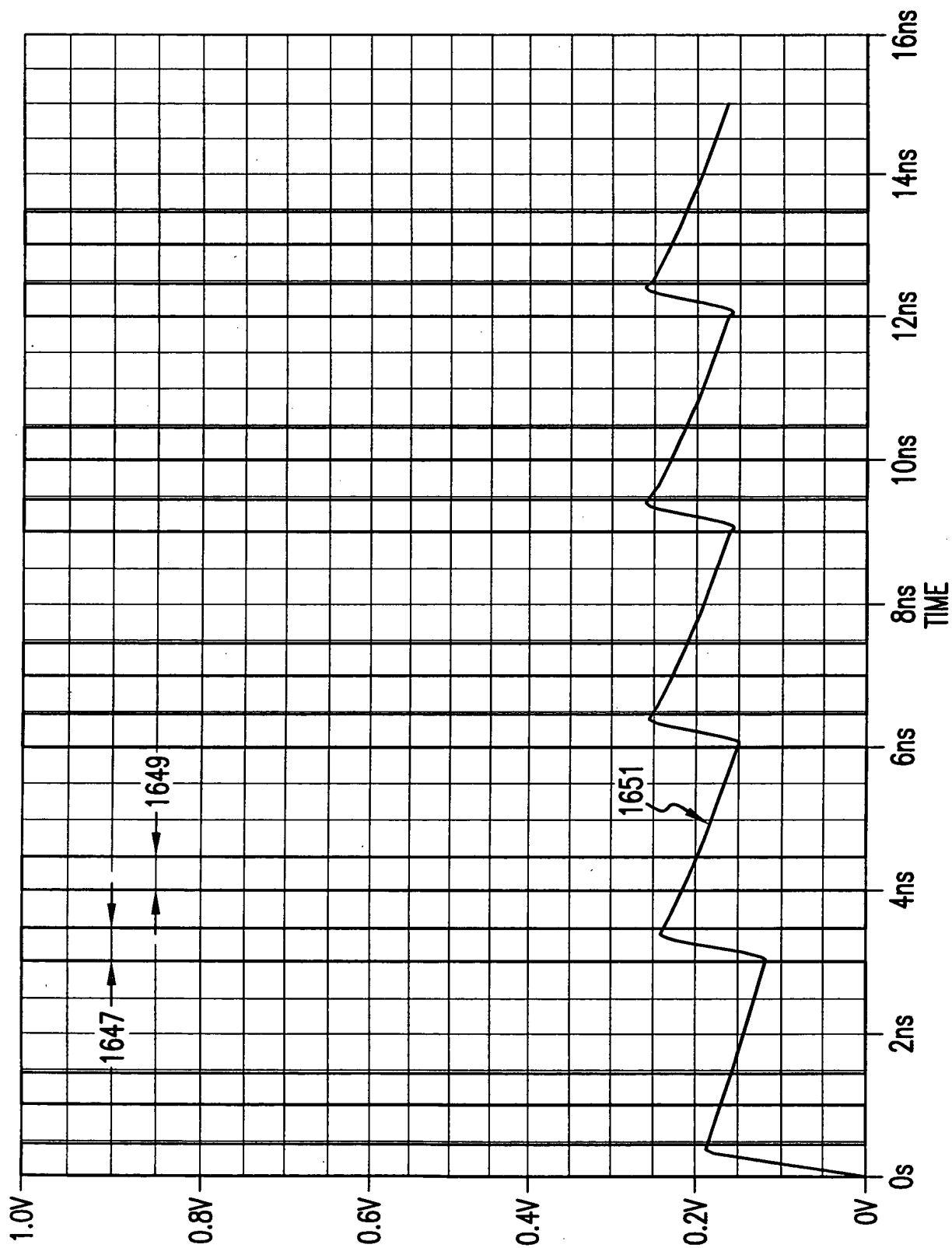


FIG. 16J

Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals

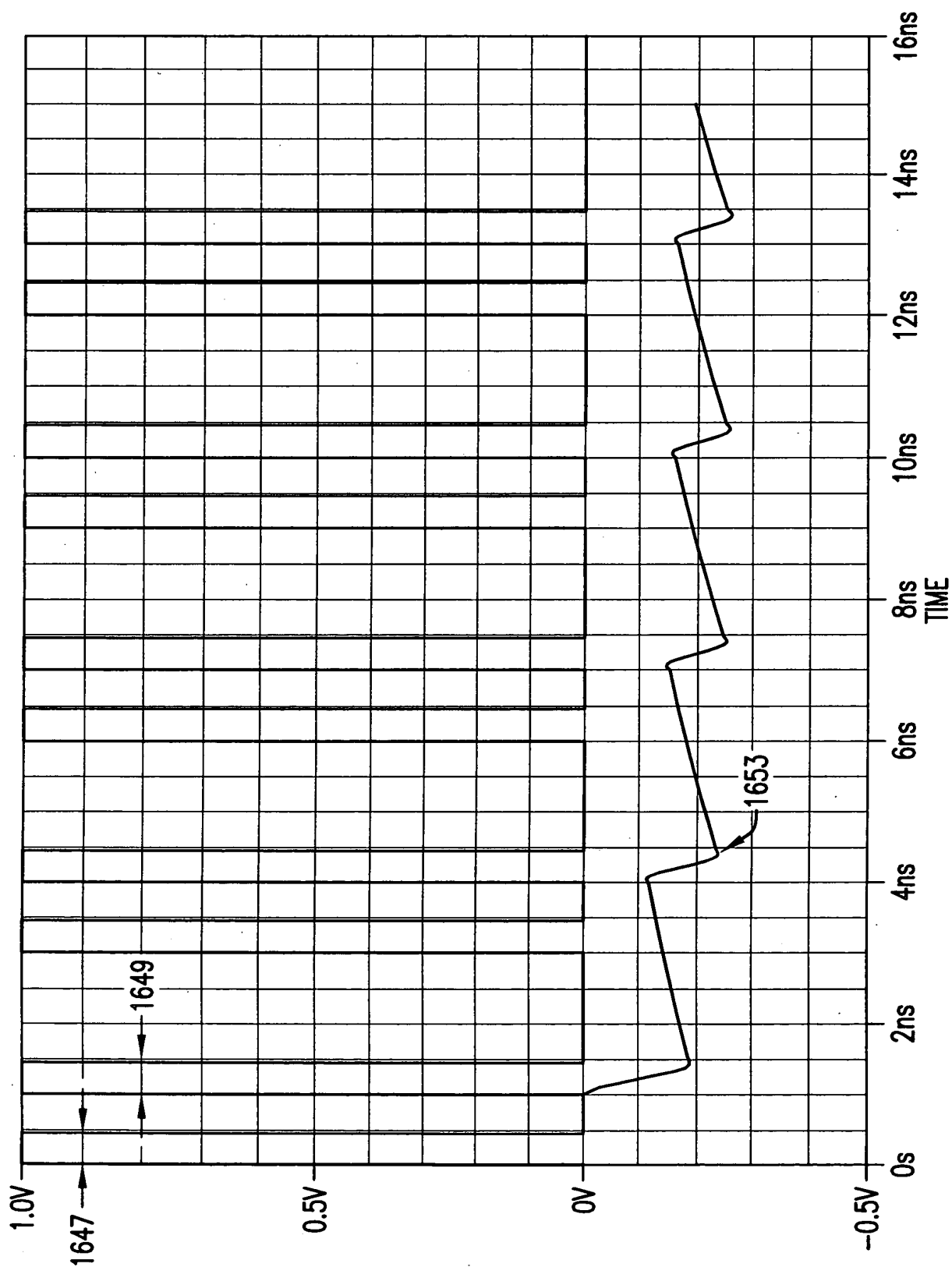


FIG. 16K

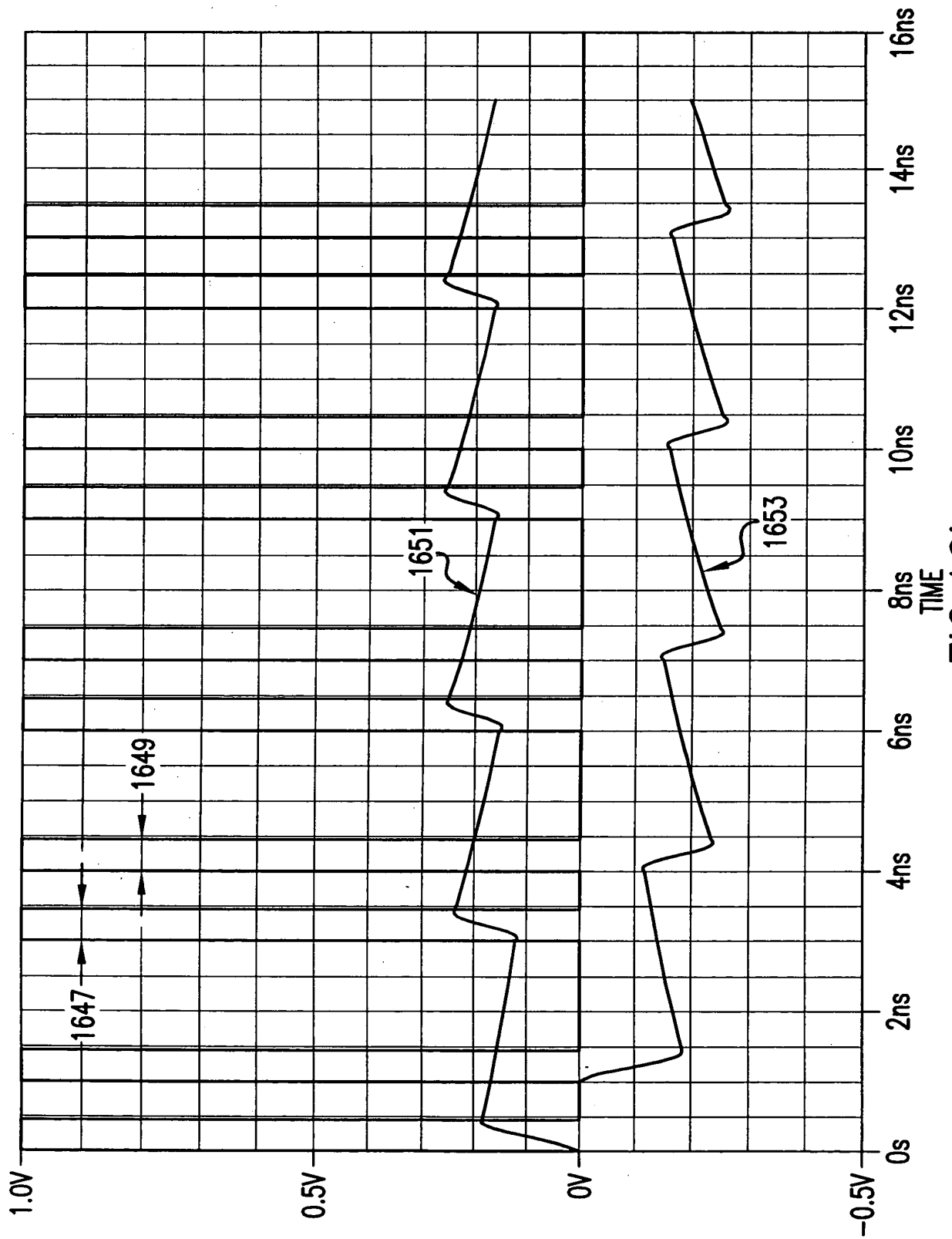


FIG. 16L

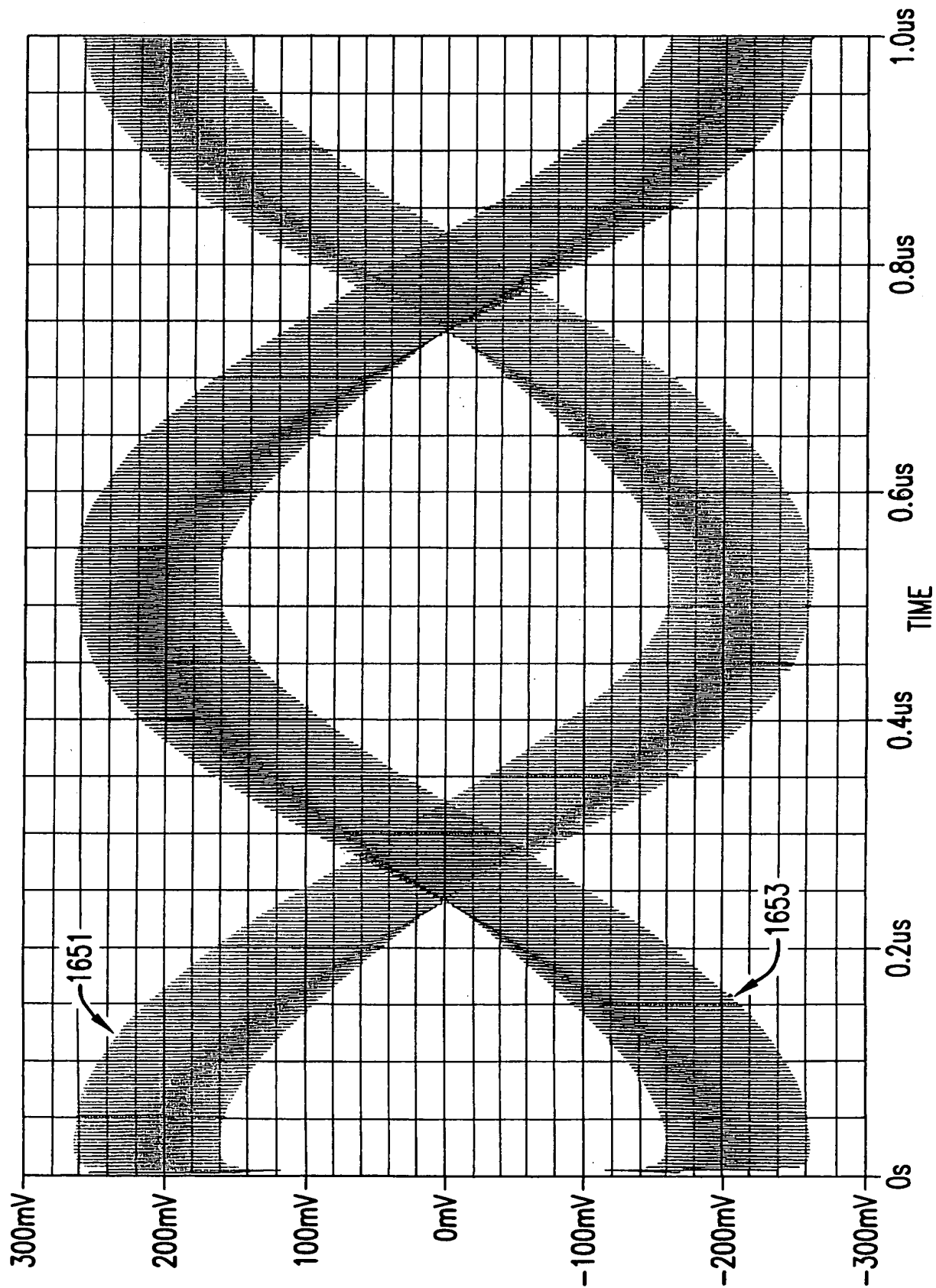


FIG. 16M

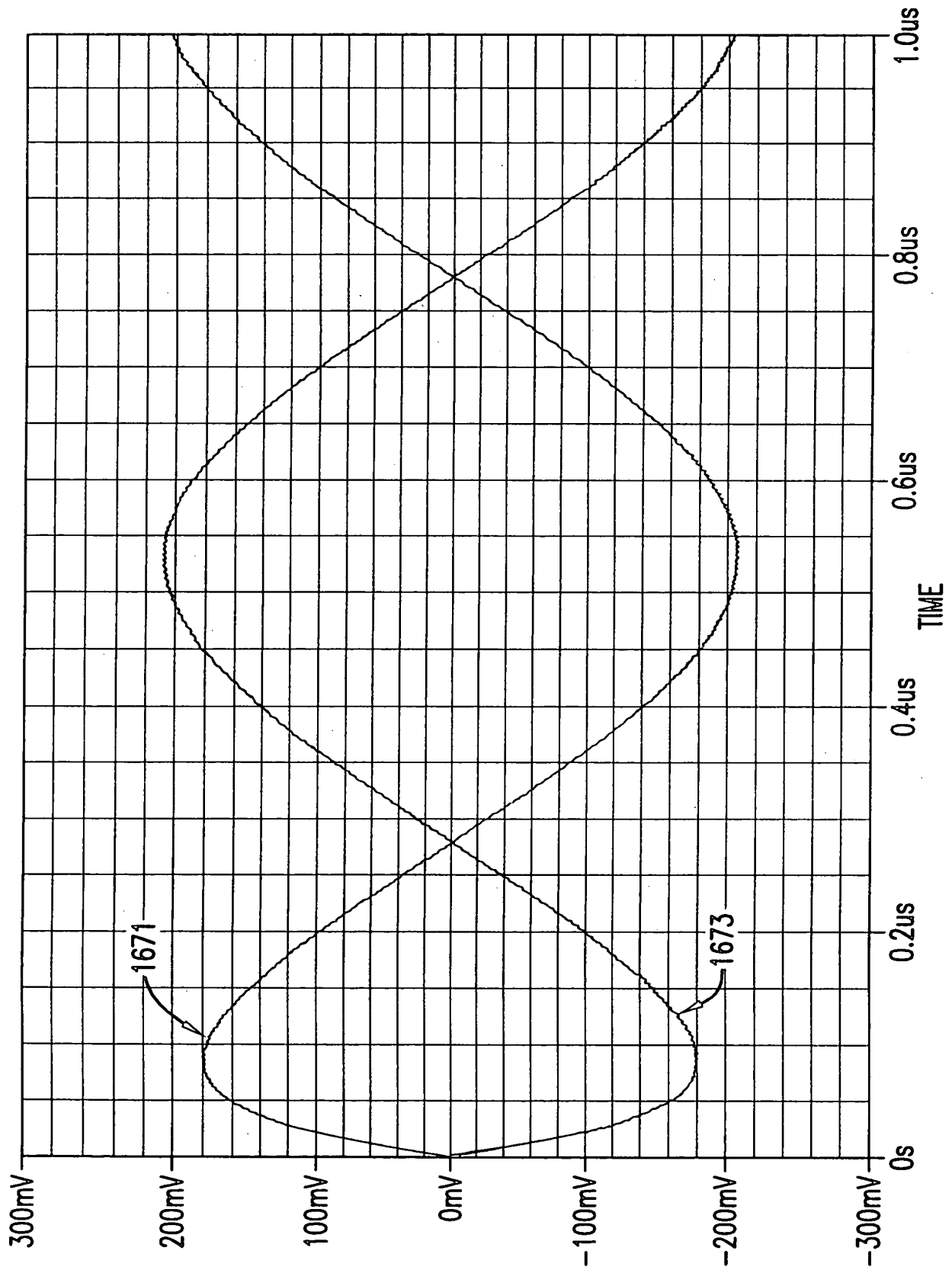


FIG. 16N

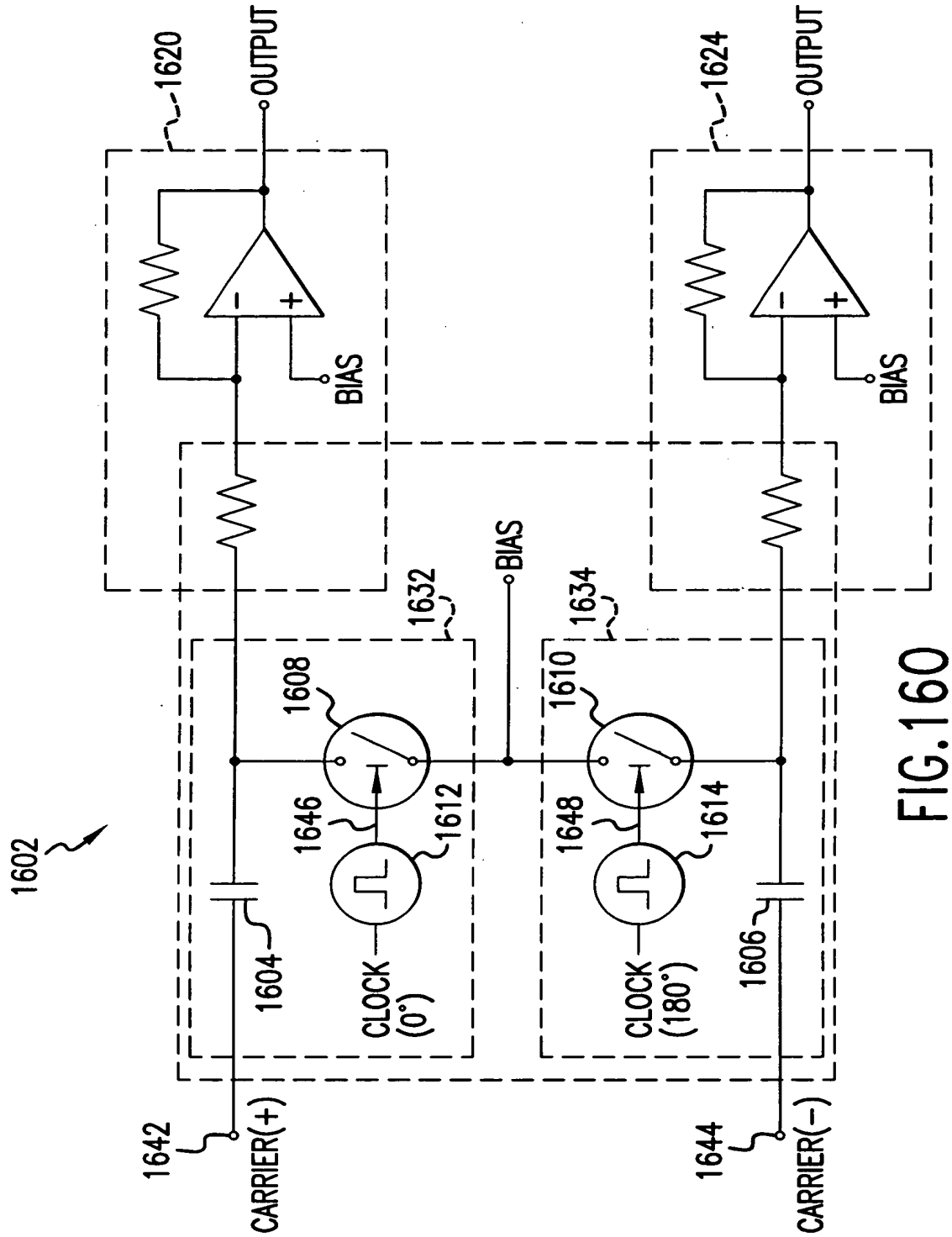


FIG.160

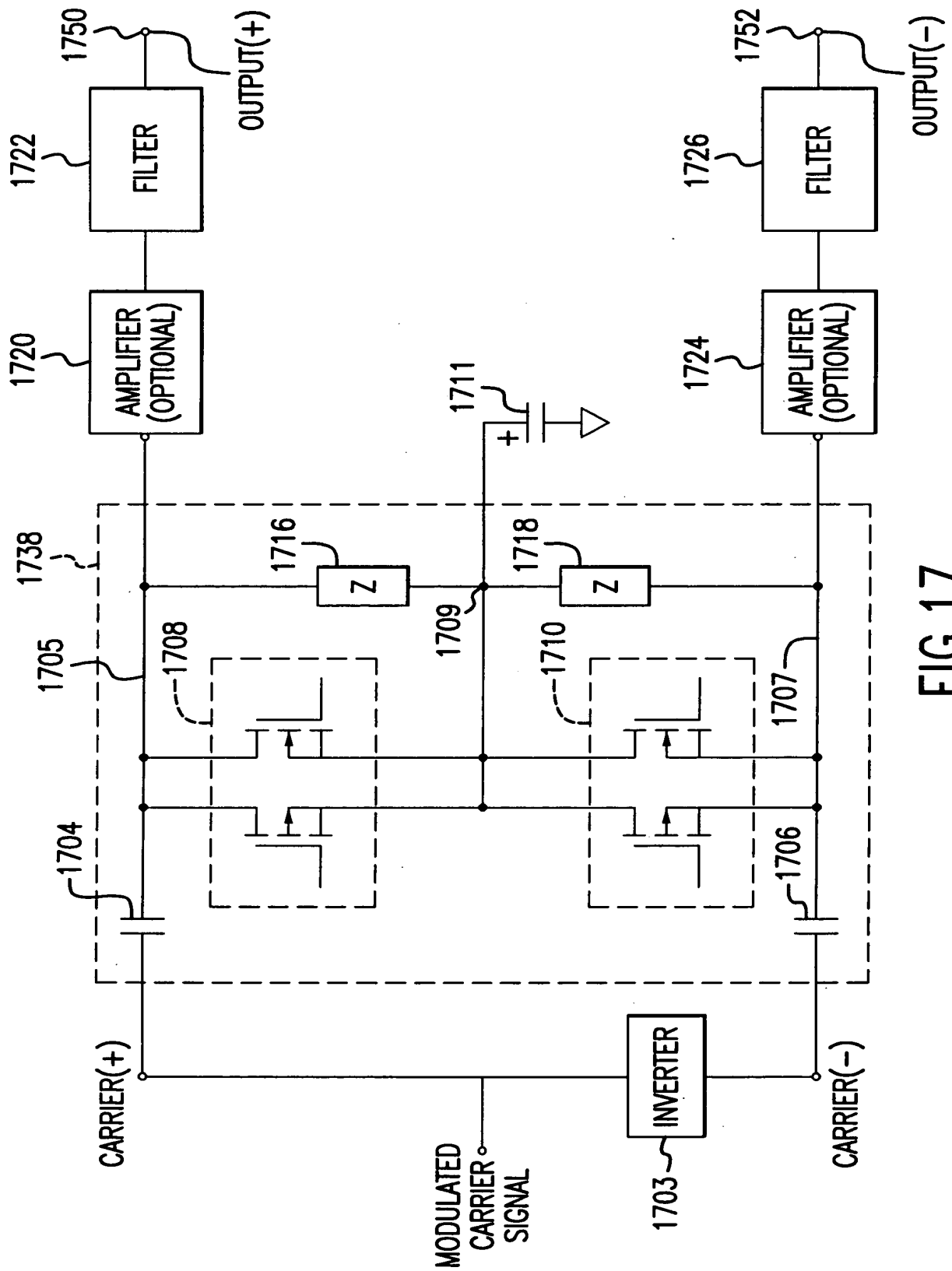


FIG.17

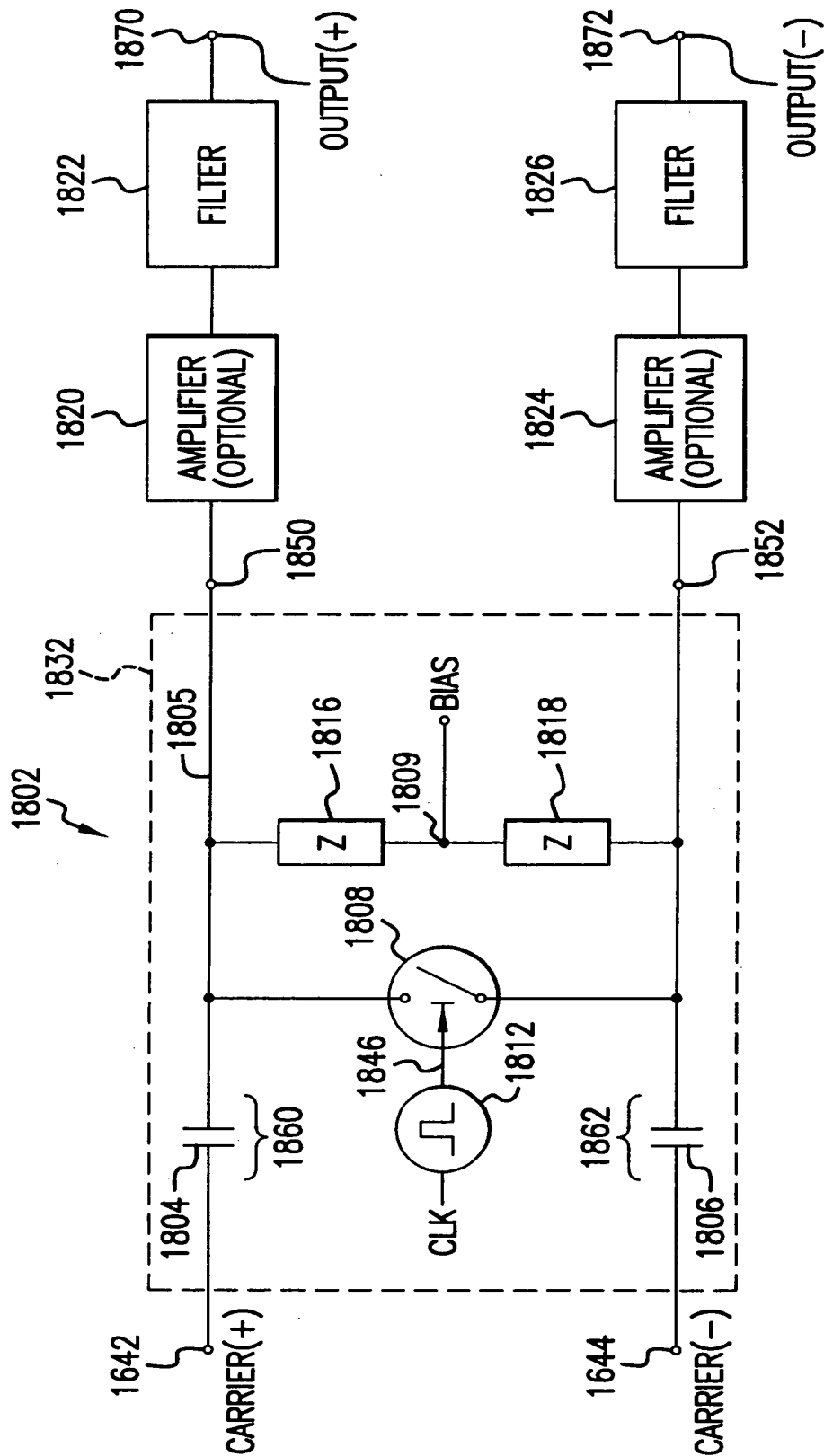


FIG. 18A



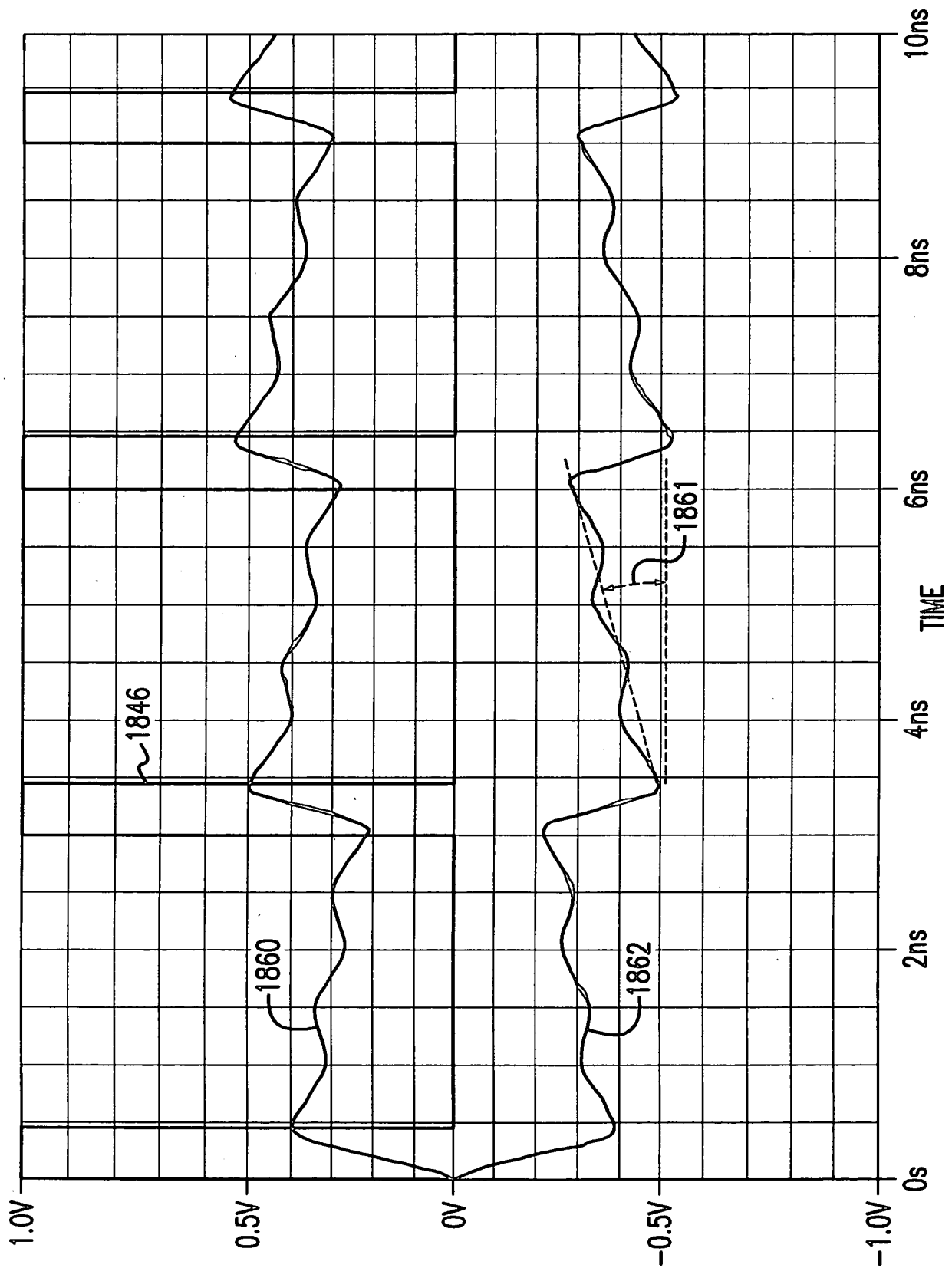


FIG. 18B

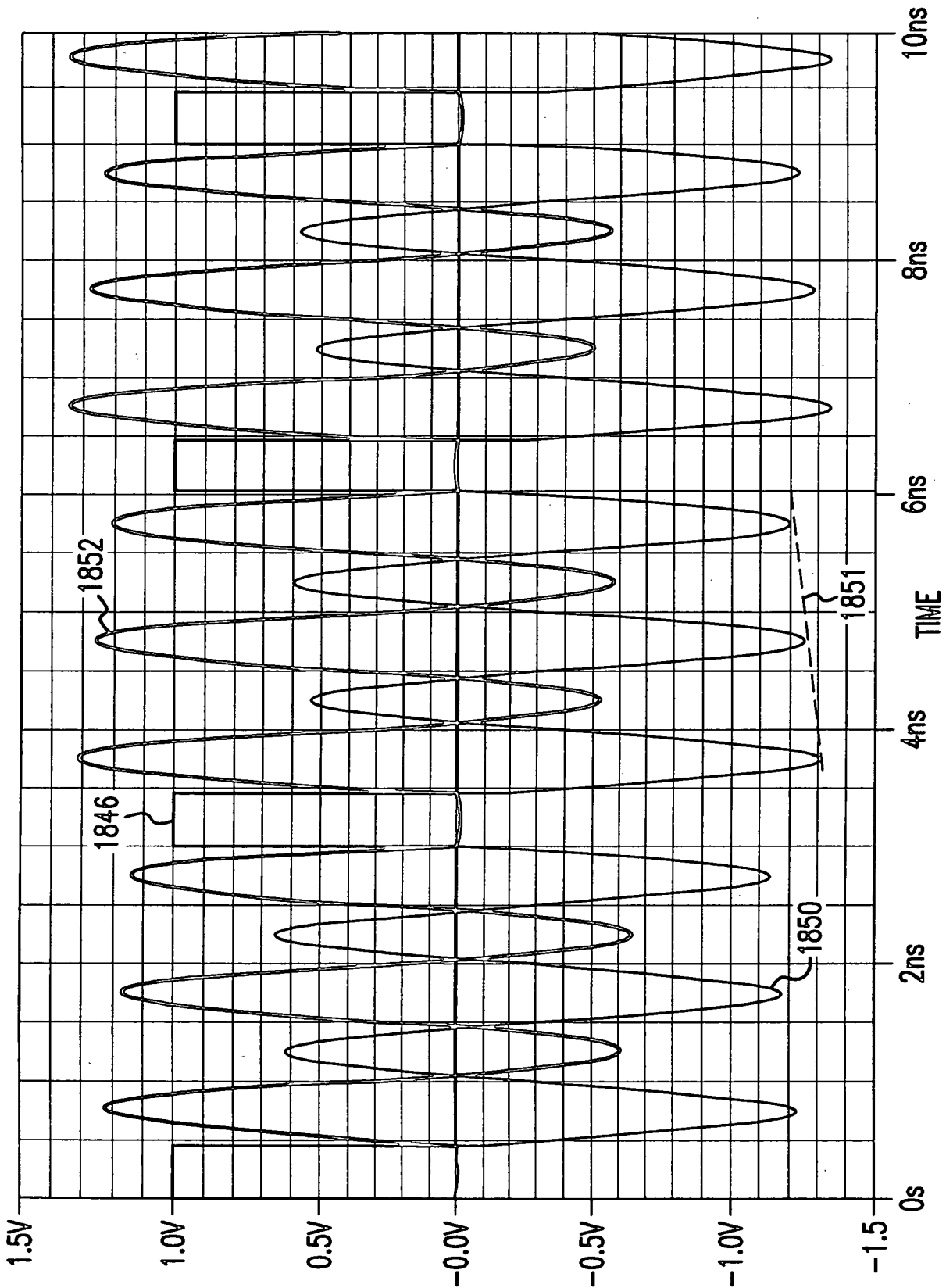


FIG. 18C

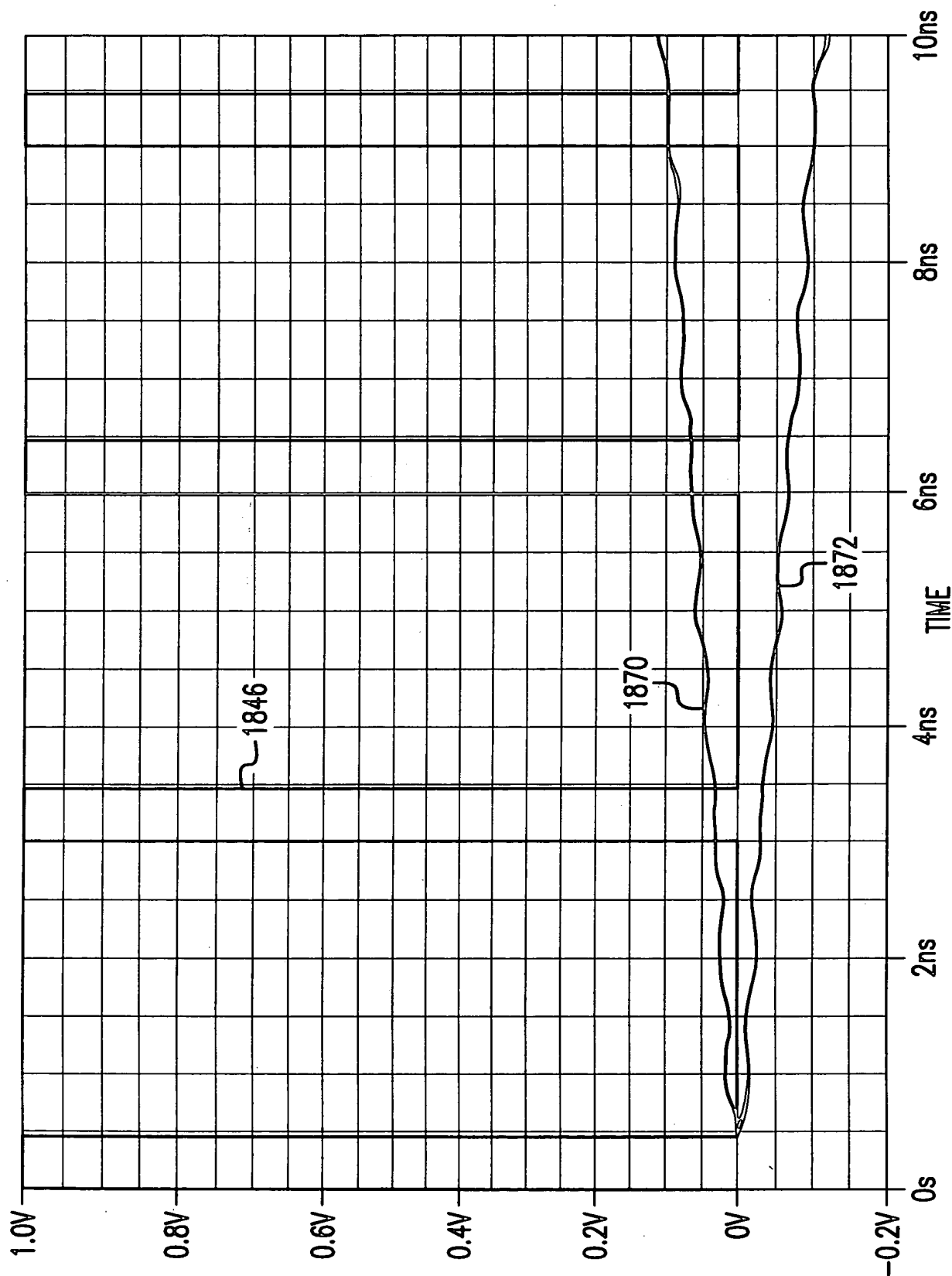


FIG. 18D

Appl. No. 09/855,851; Group Art Unit: 2681  
Dkt. No. 1744.1260001; Batch No.: (to be assigned)  
Inventor(s): Sorrells *et al.*; Tel: 202/371-2600  
Title: Apparatus, System, and Method for Down-Converting  
and Up-Converting Electromagnetic Signals

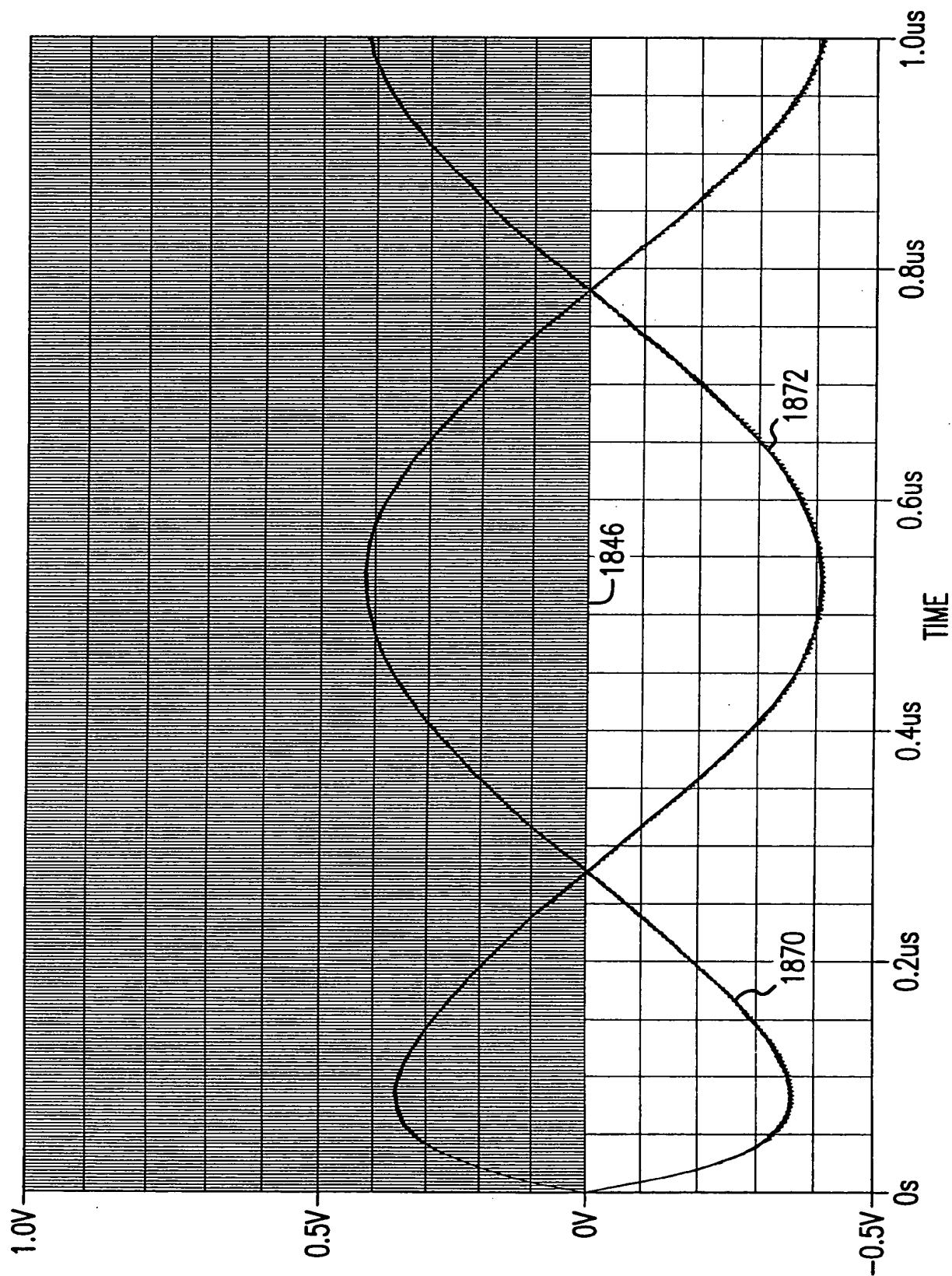


FIG.18E

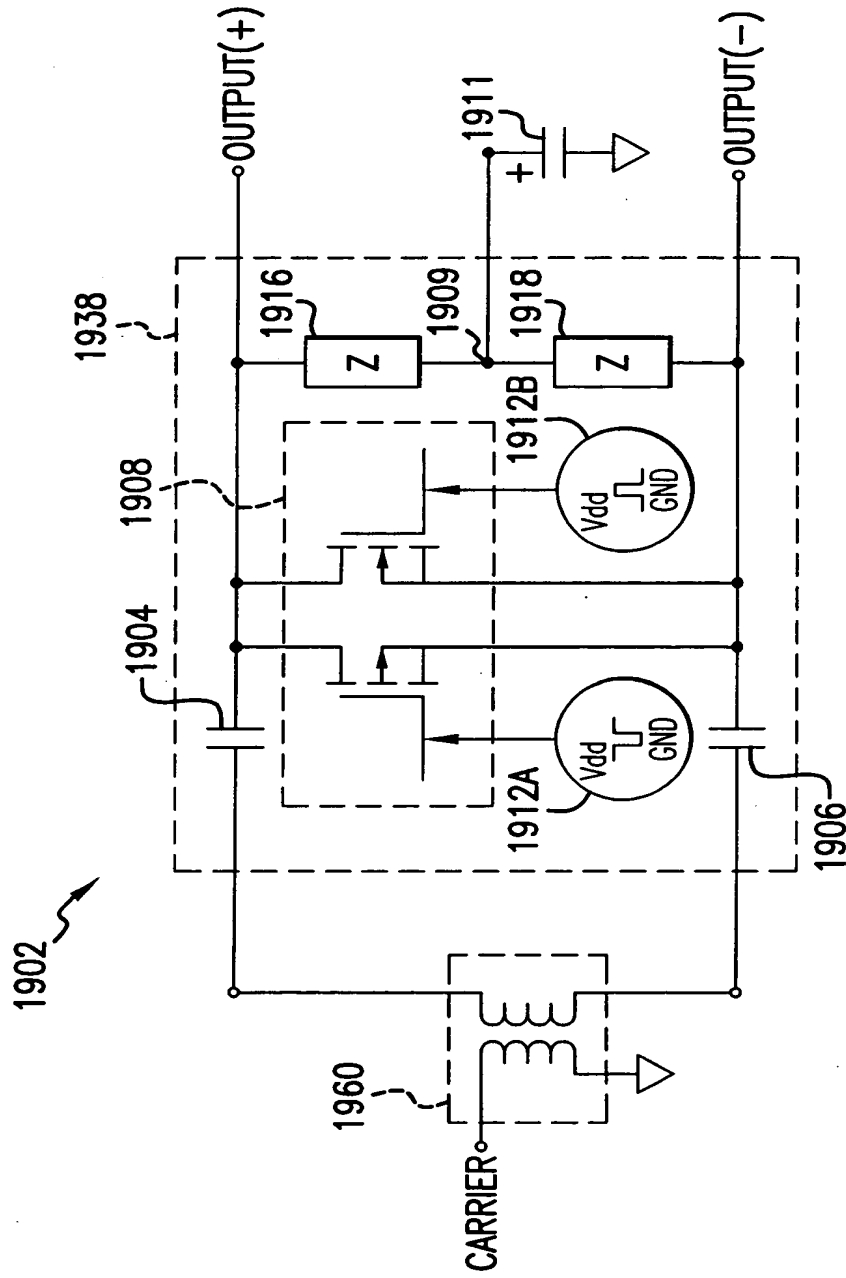


FIG. 19

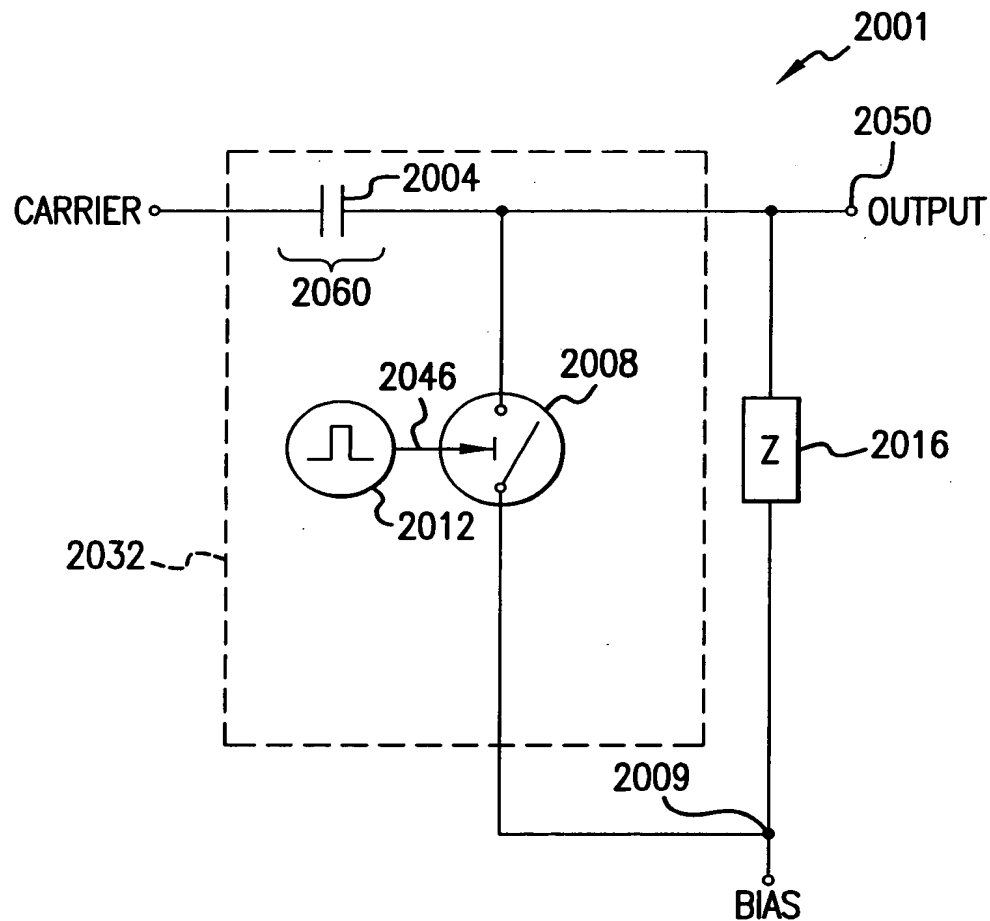


FIG. 20A

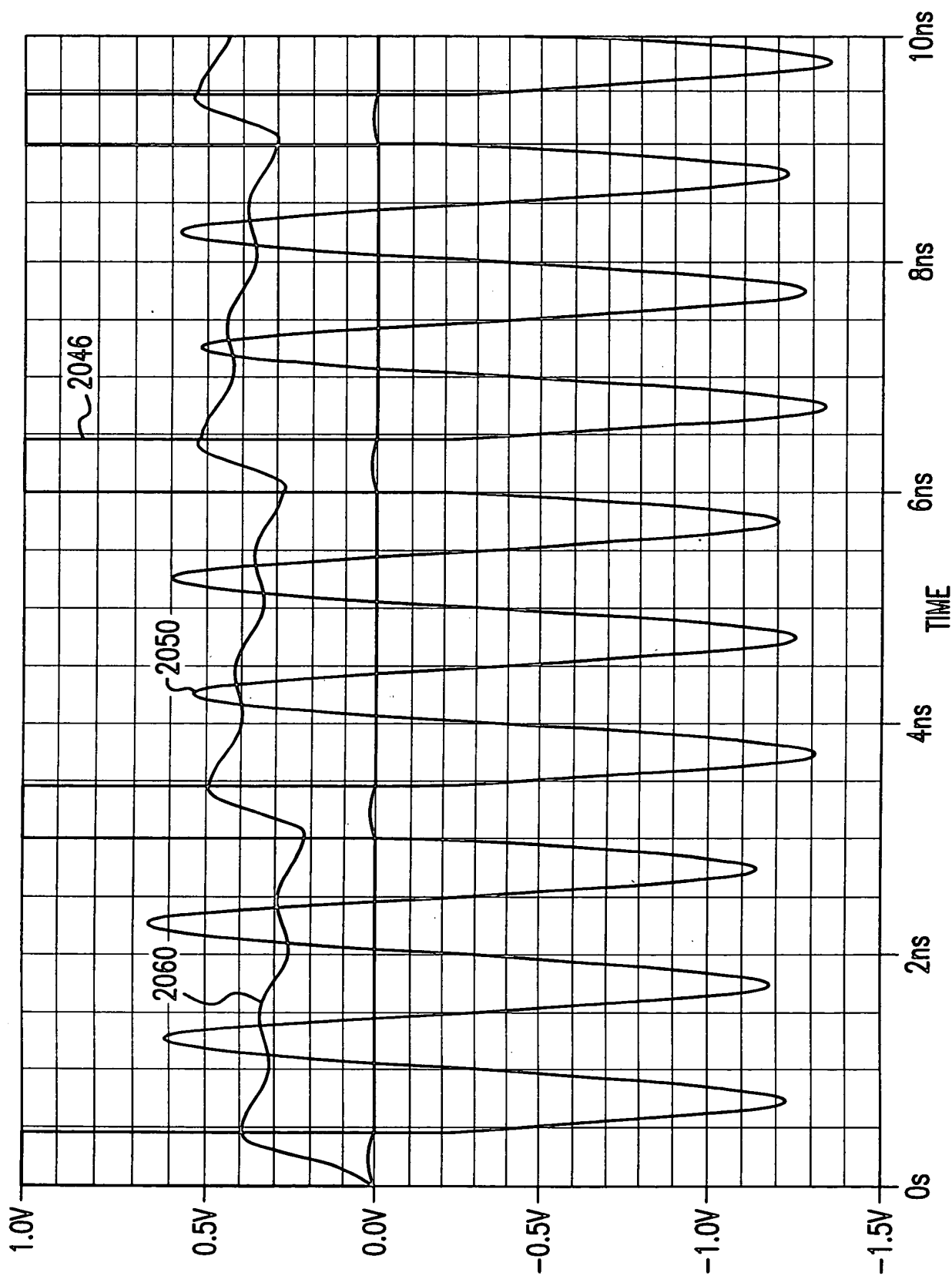


FIG.20B

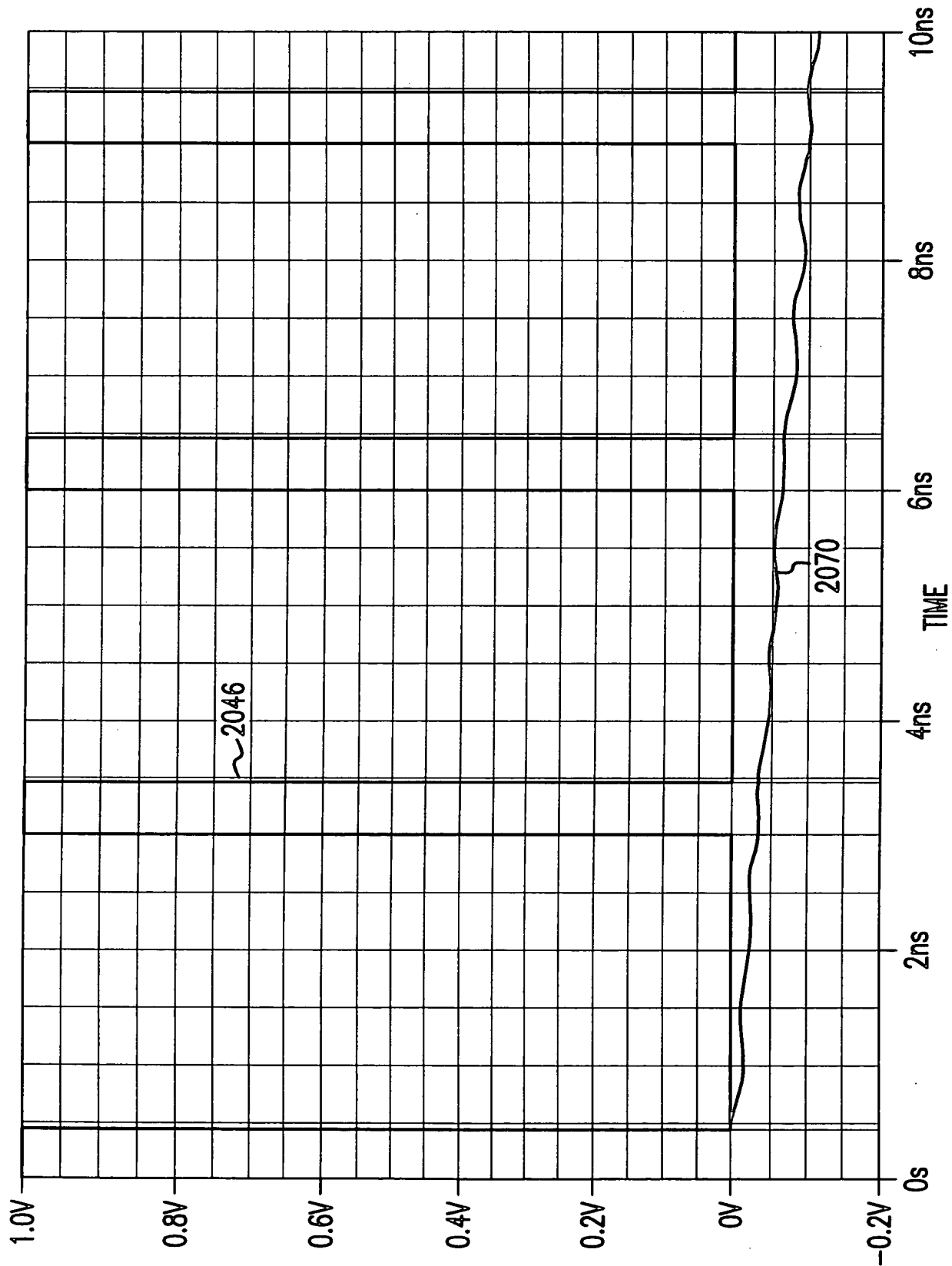


FIG. 20C



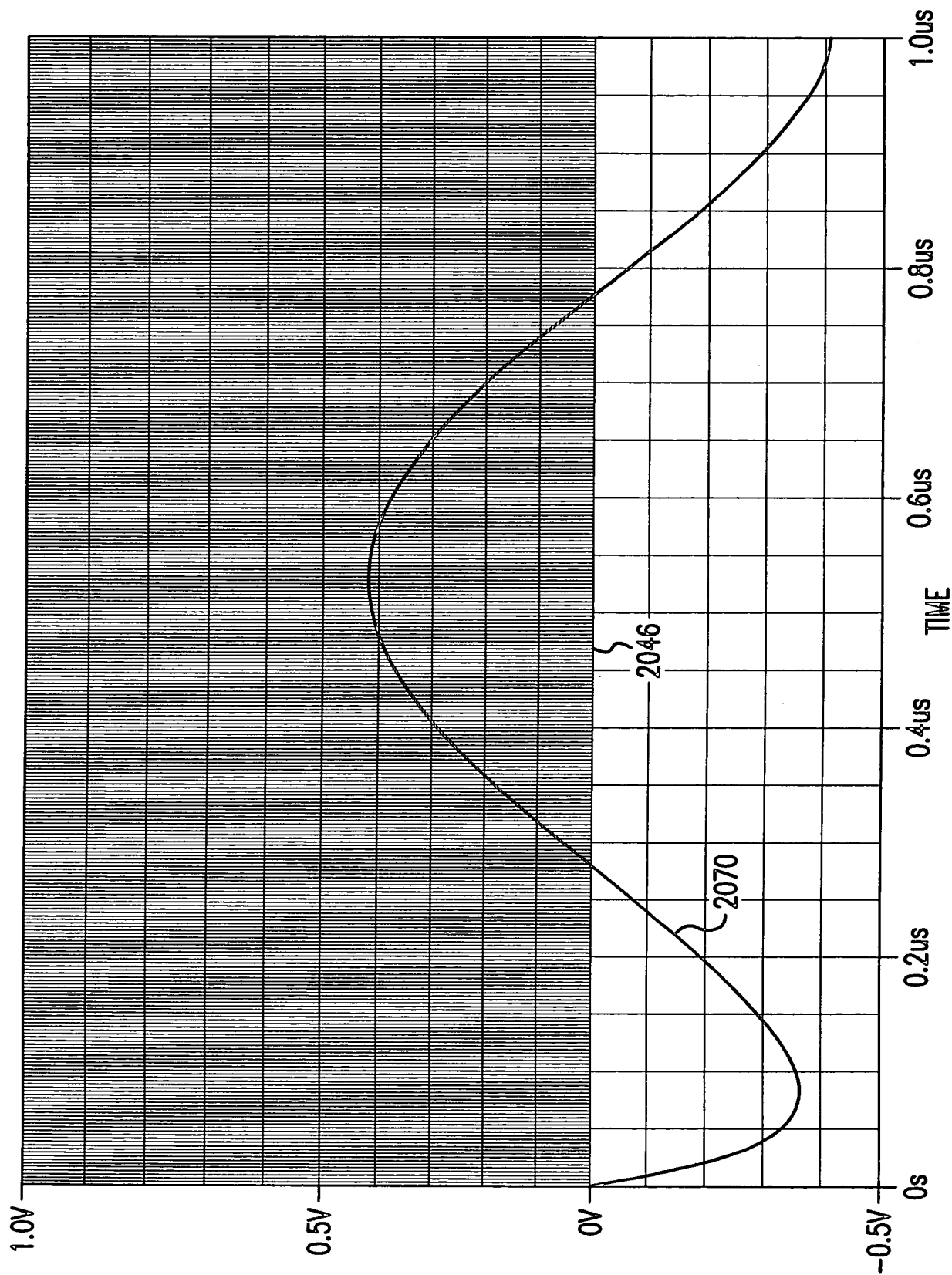


FIG. 20D

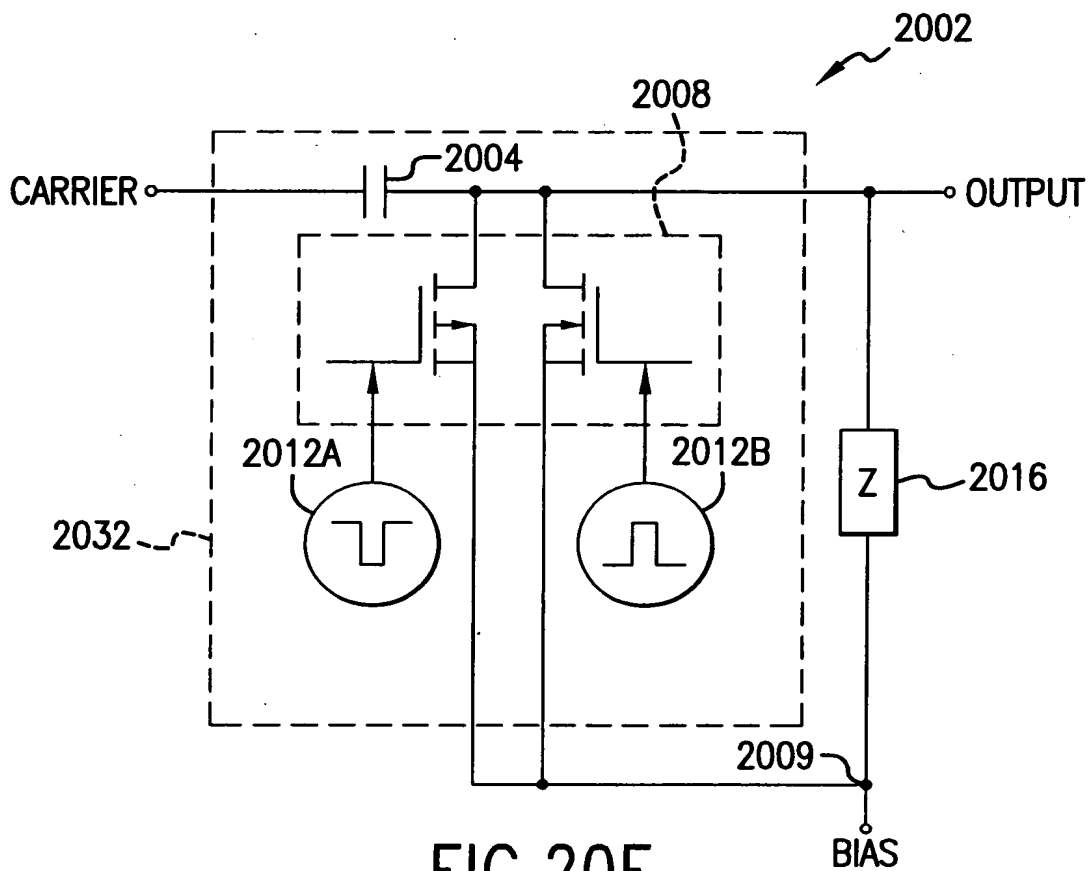


FIG. 20E

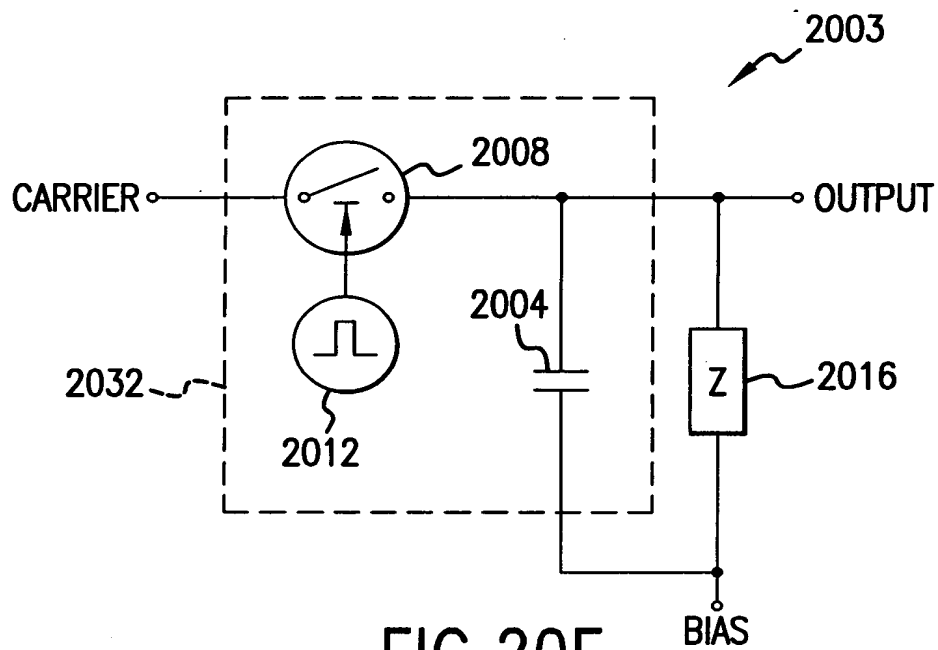
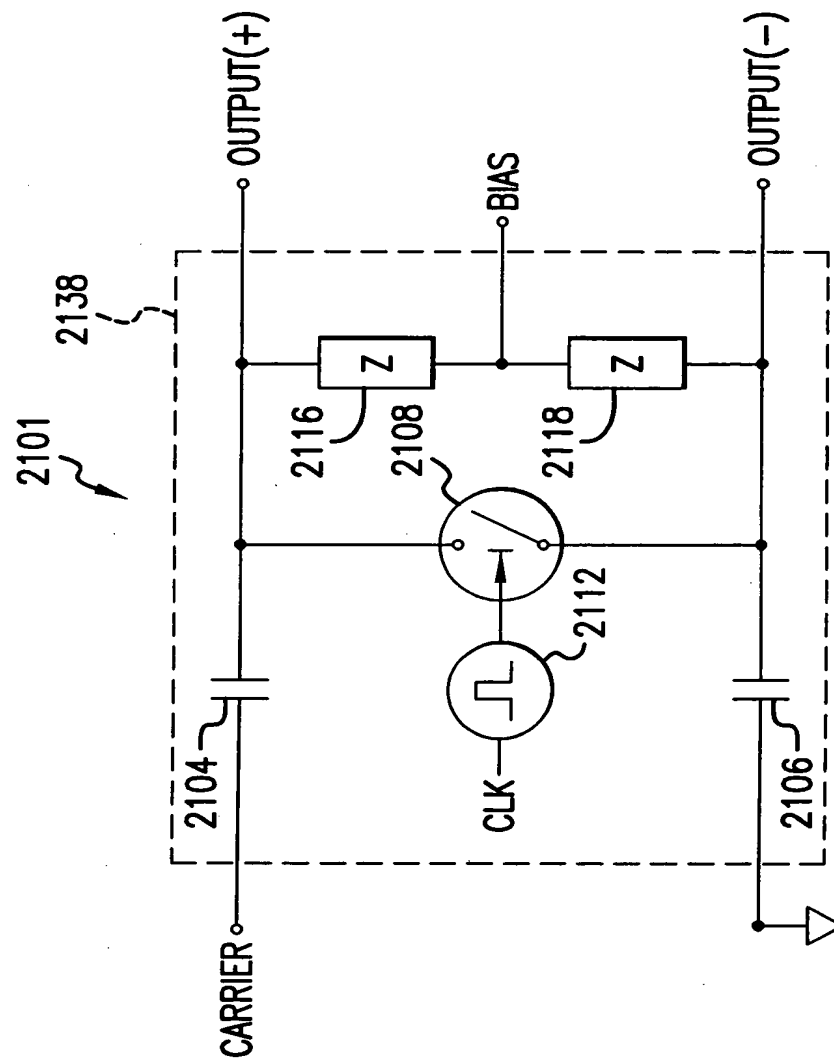


FIG.20F



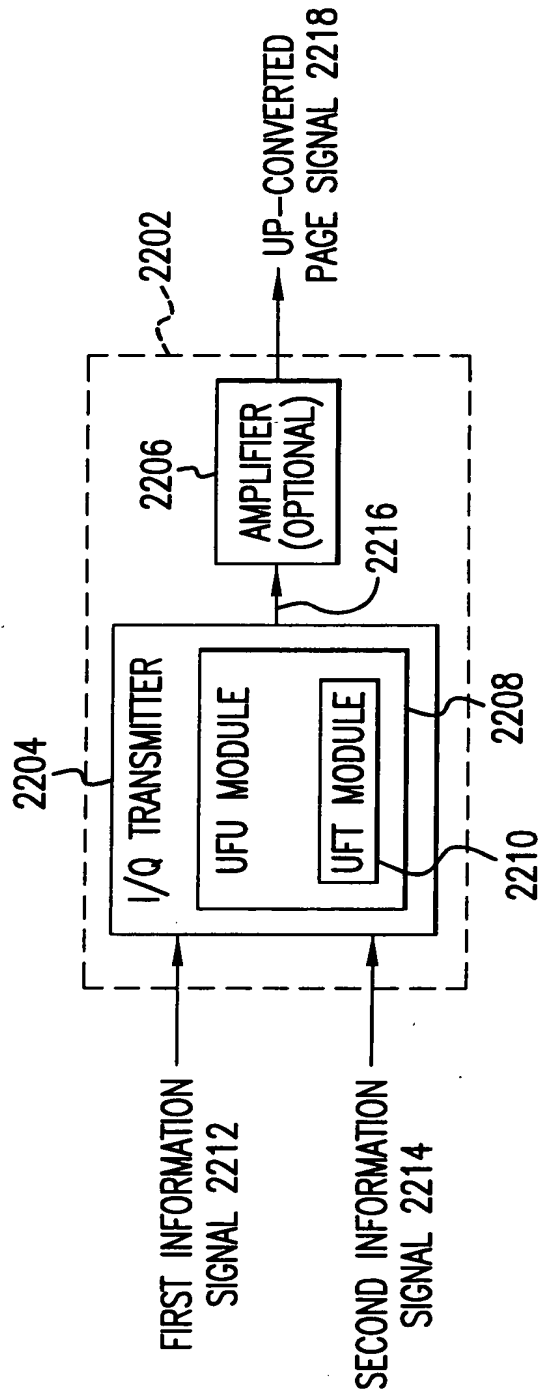


FIG. 22

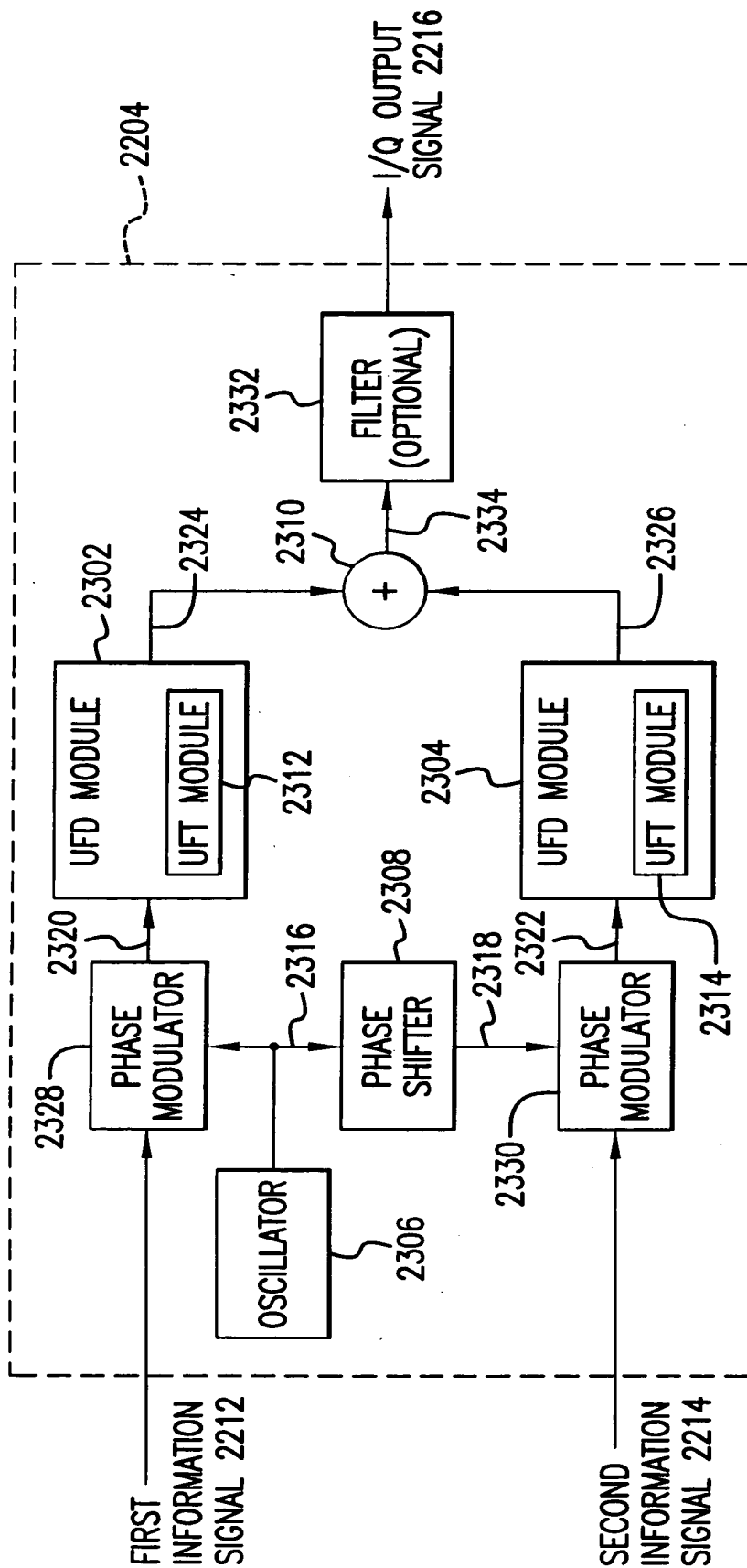
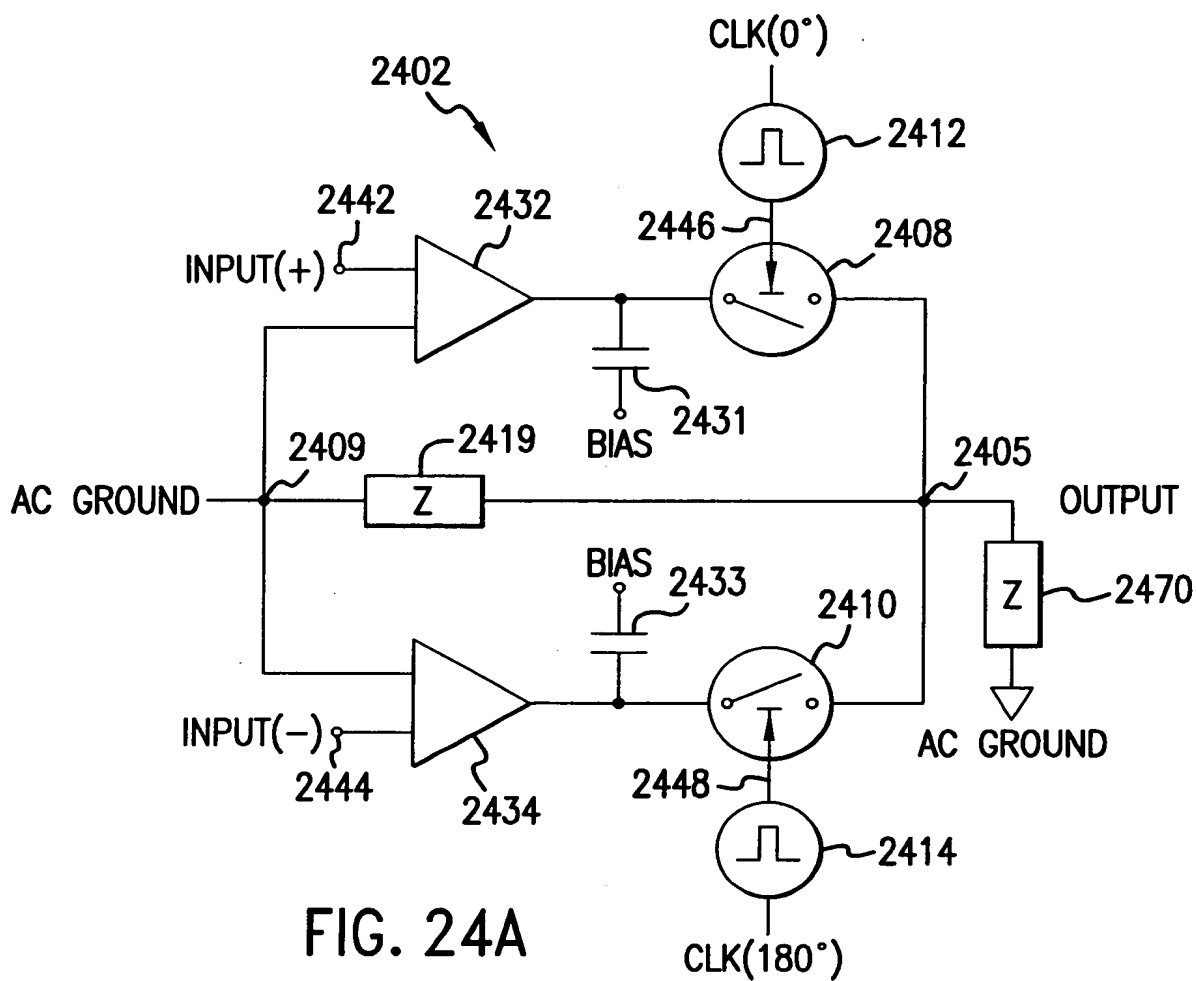


FIG. 23



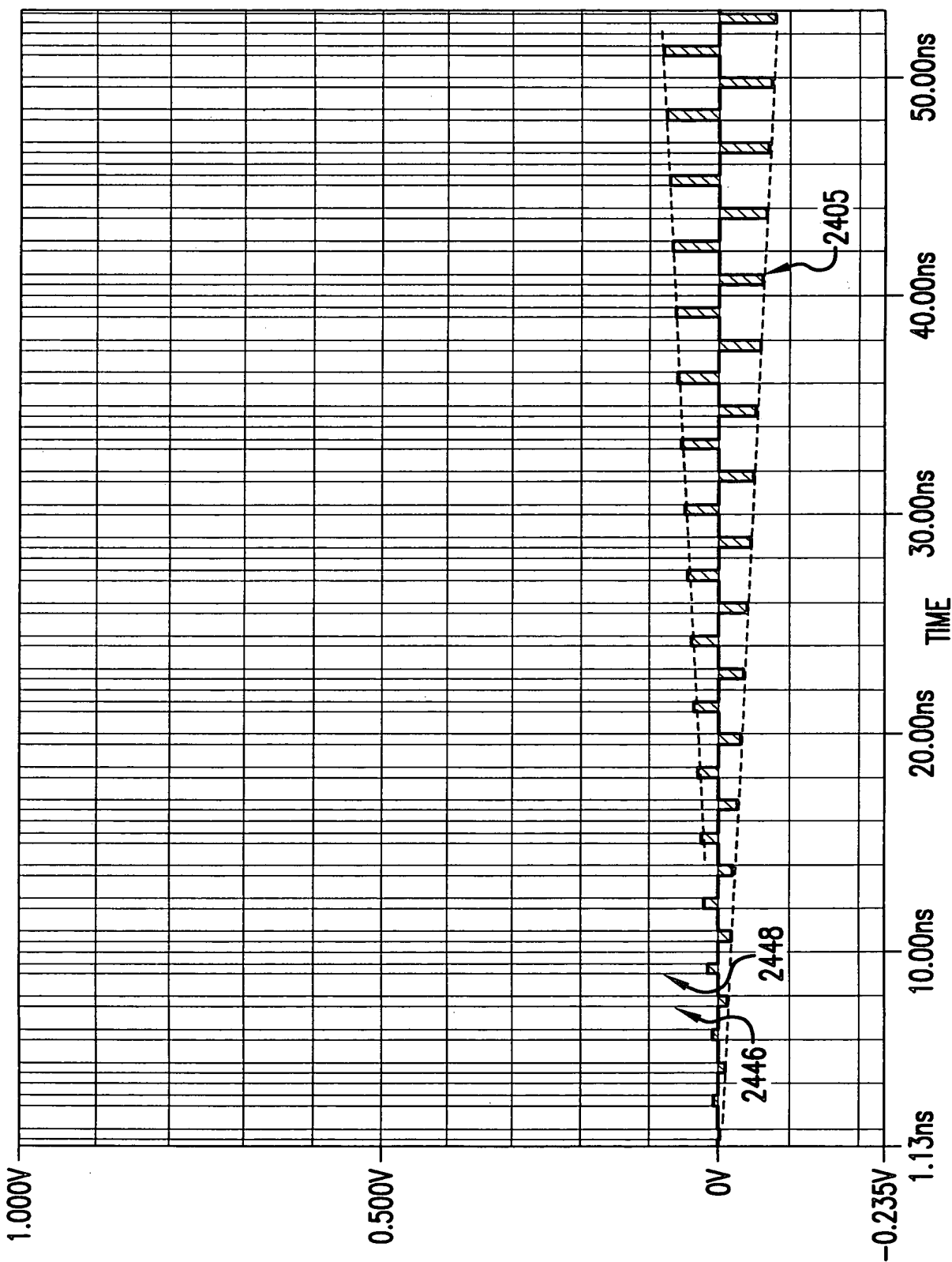


FIG. 24B



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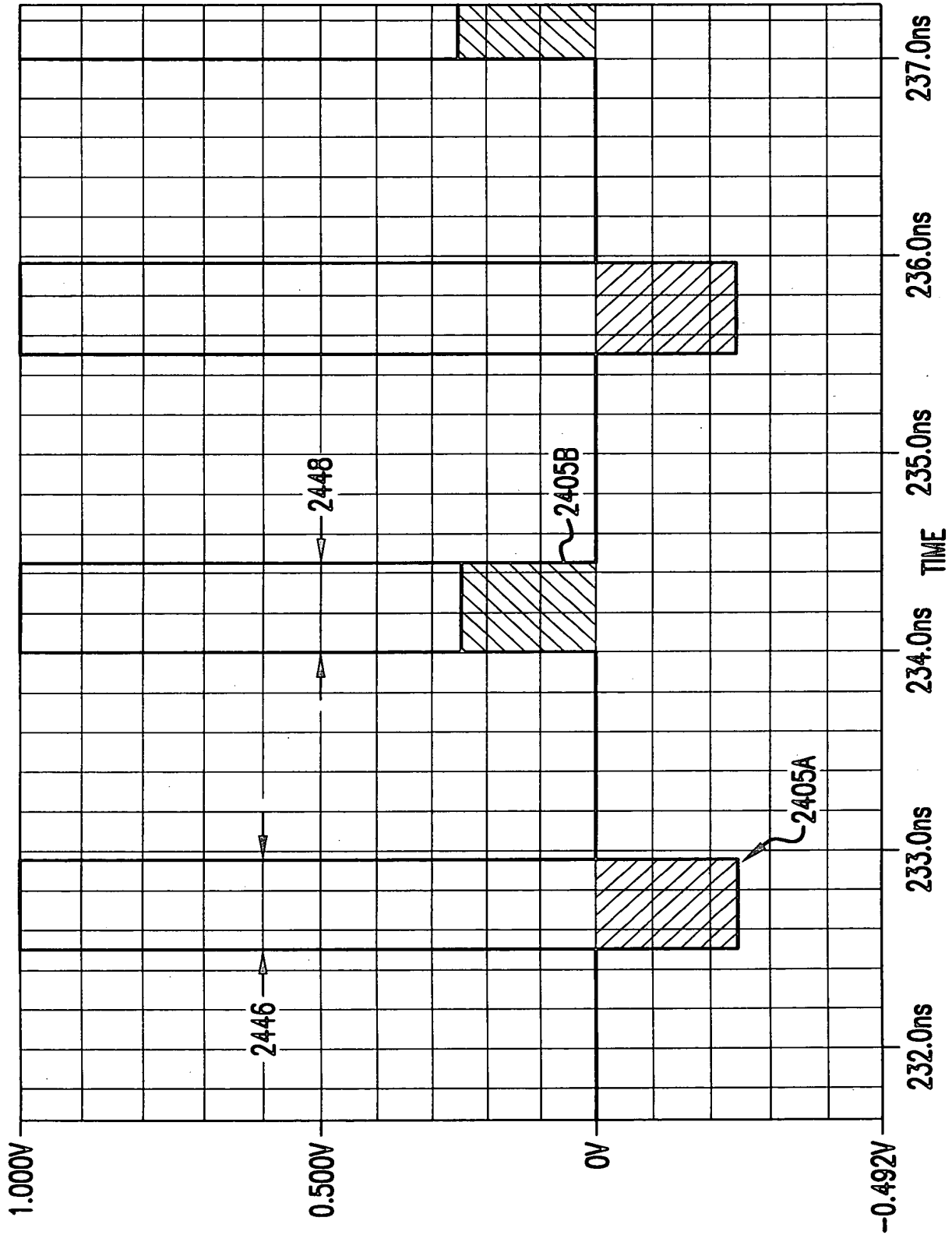


FIG. 24C

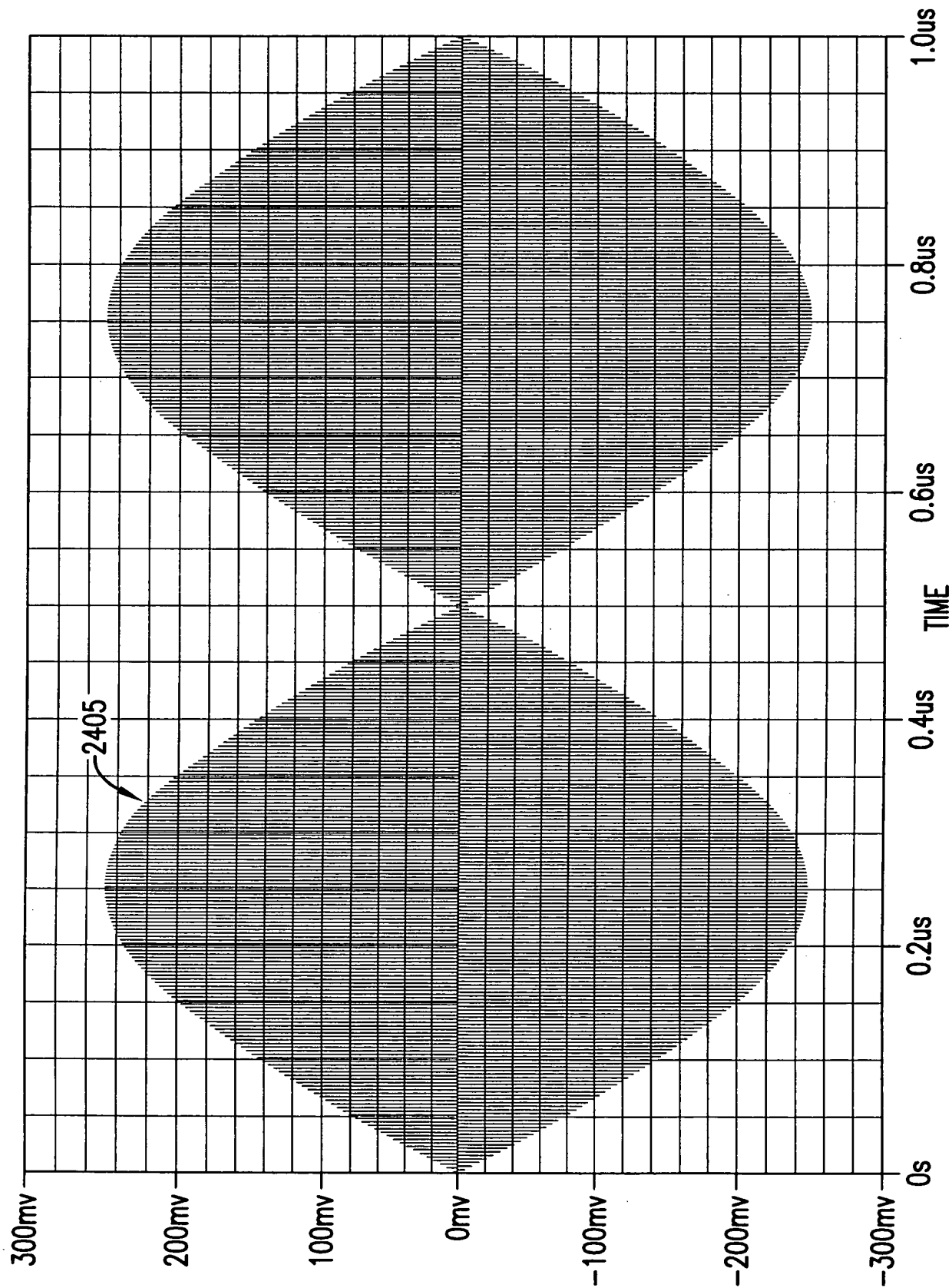


FIG. 24D

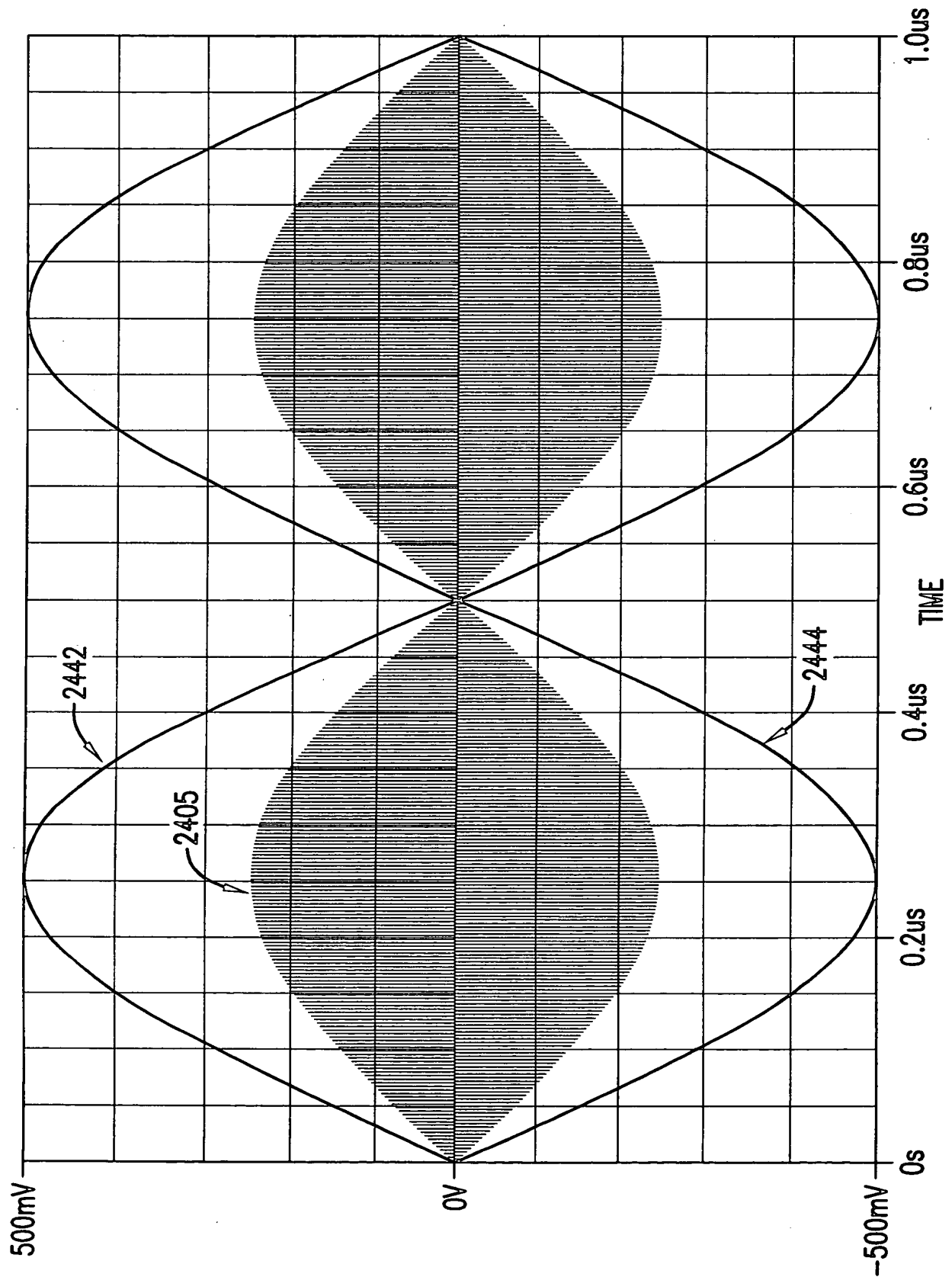


FIG. 24E

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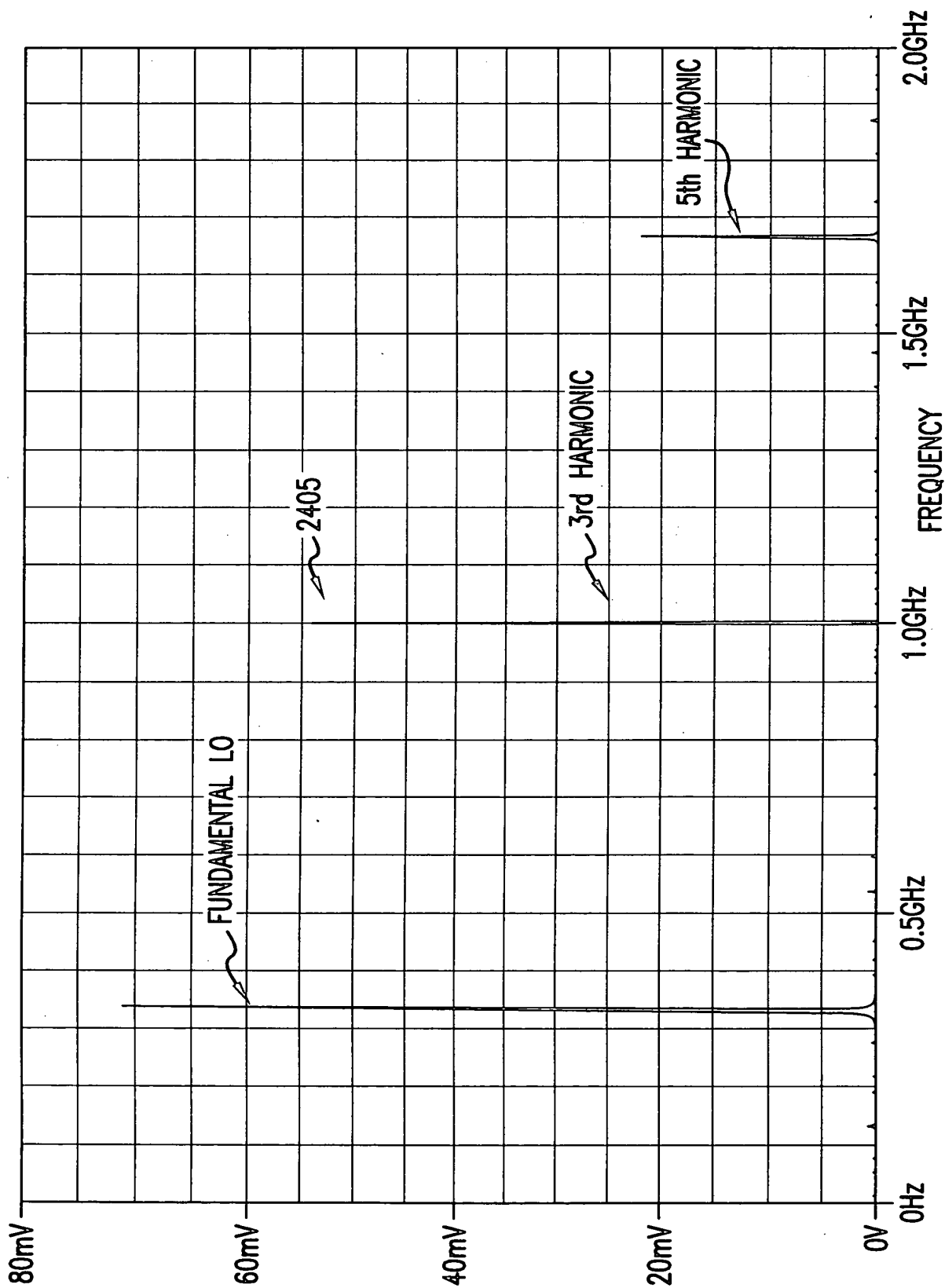
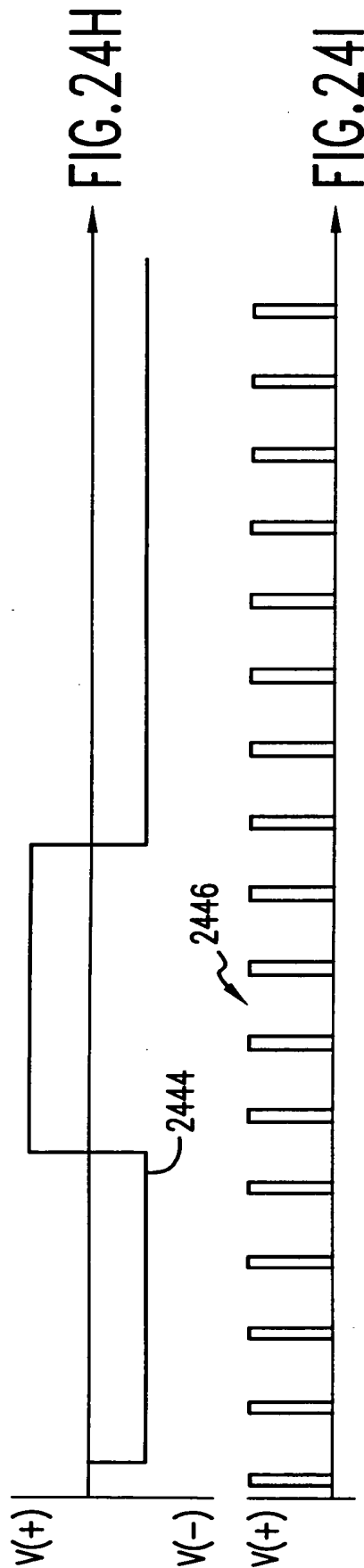
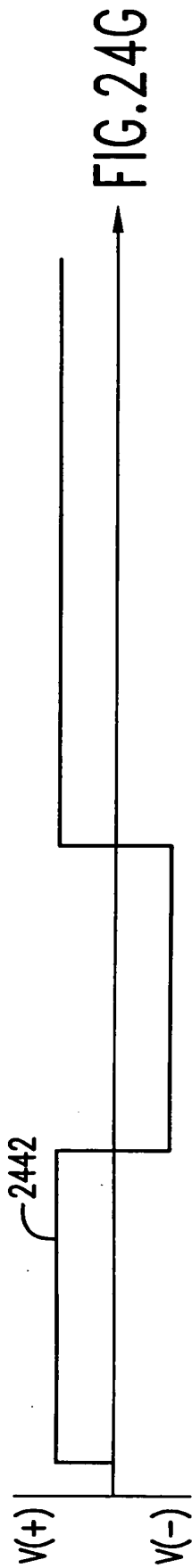
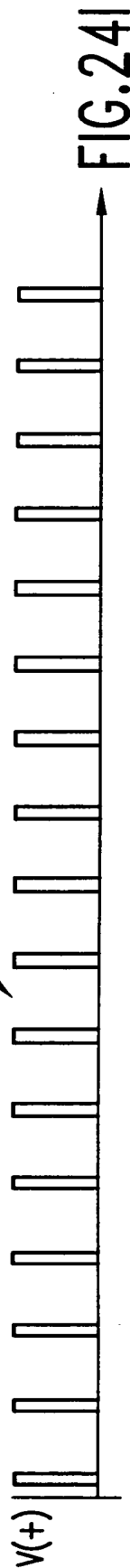


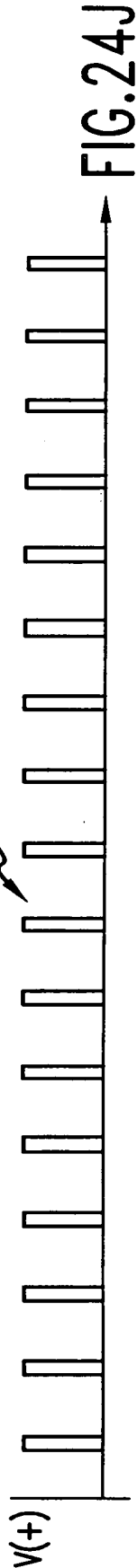
FIG. 24F



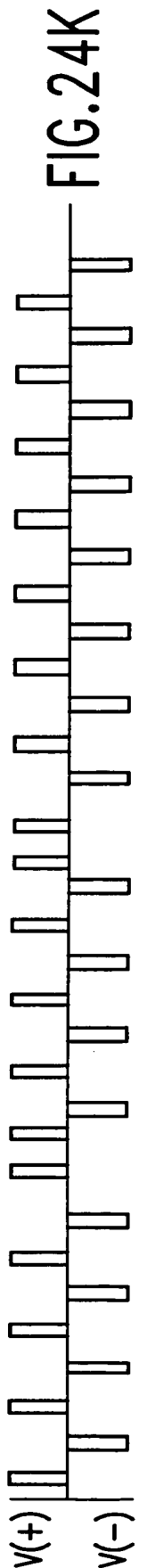
2446



2448



2405



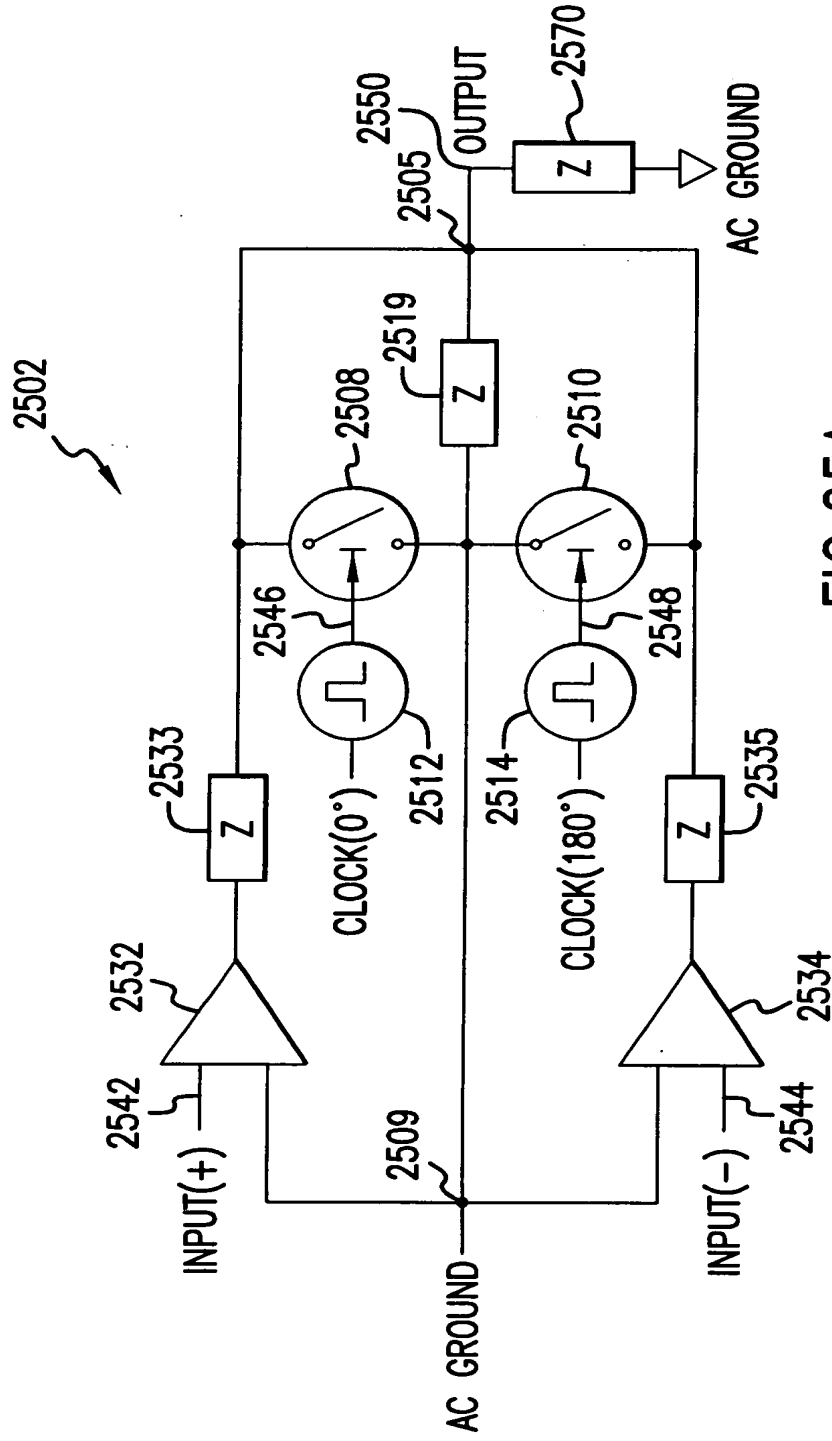
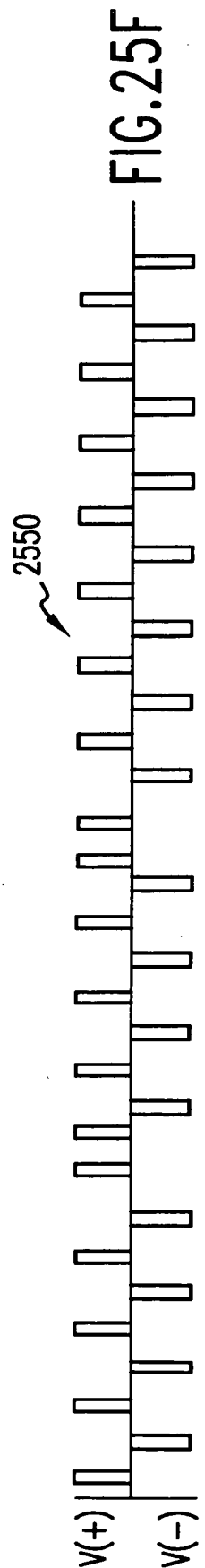
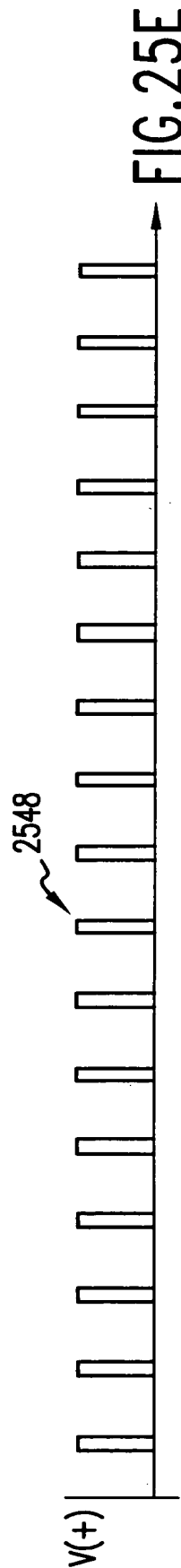
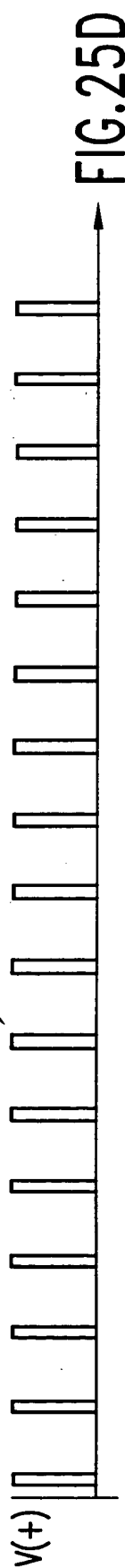
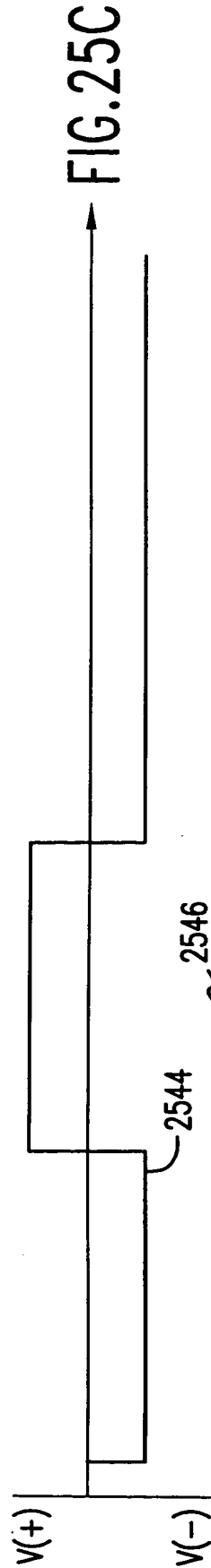
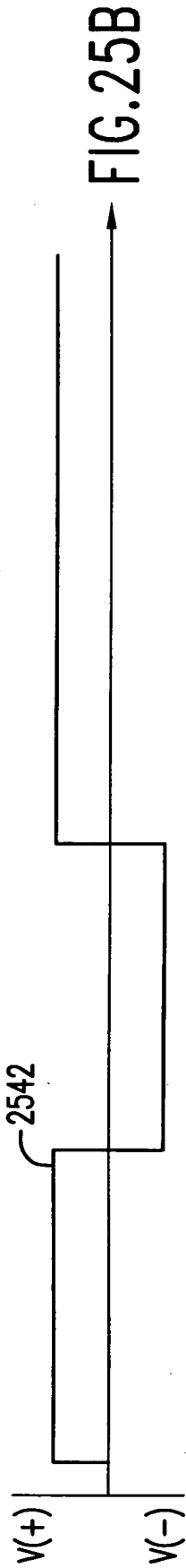


FIG. 25A



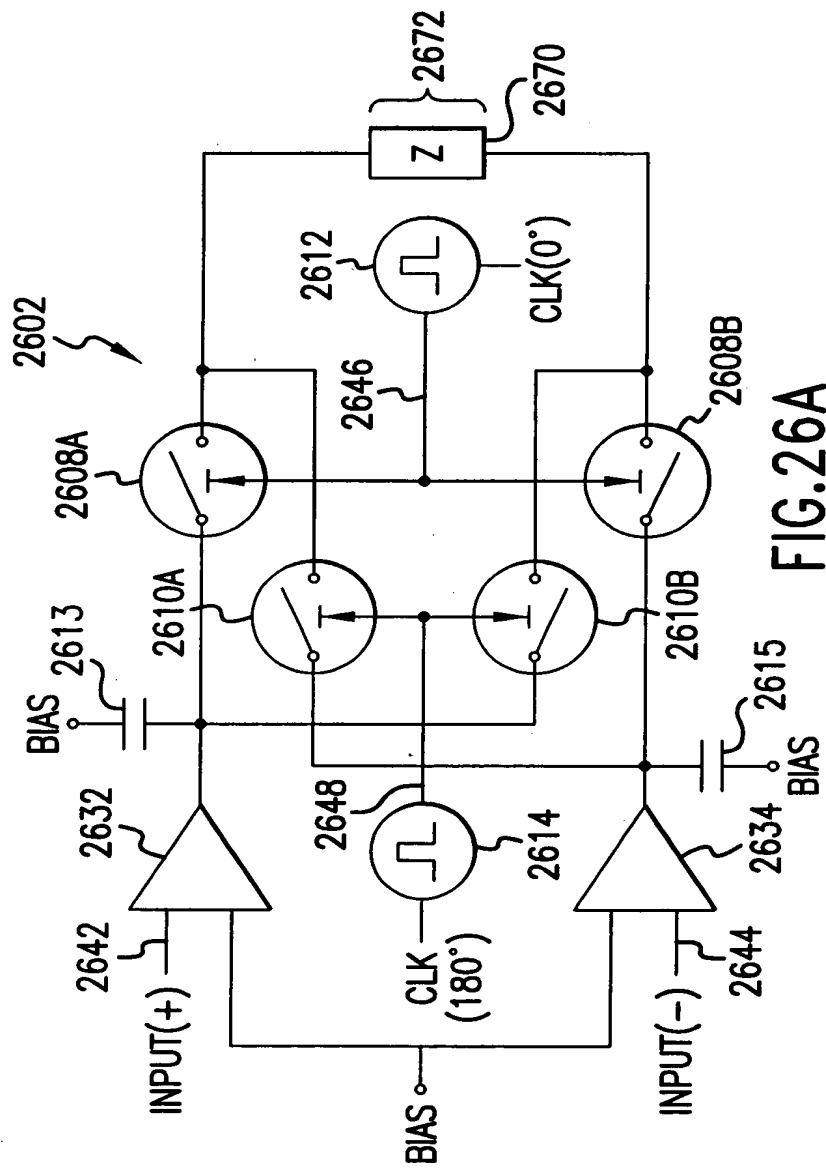
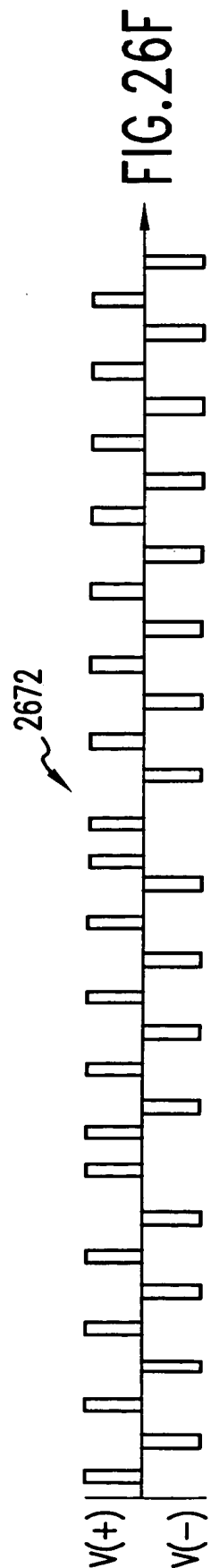
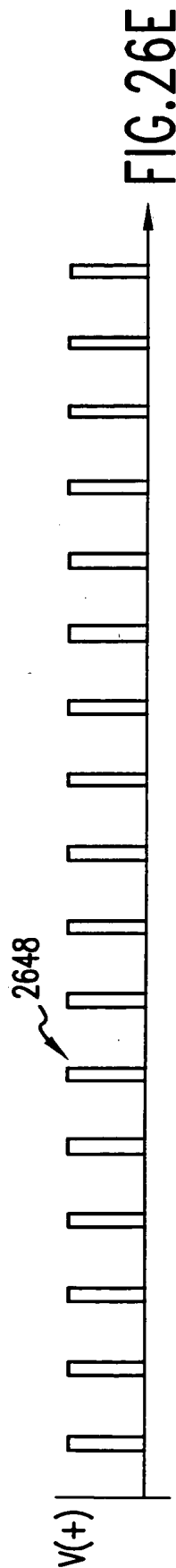
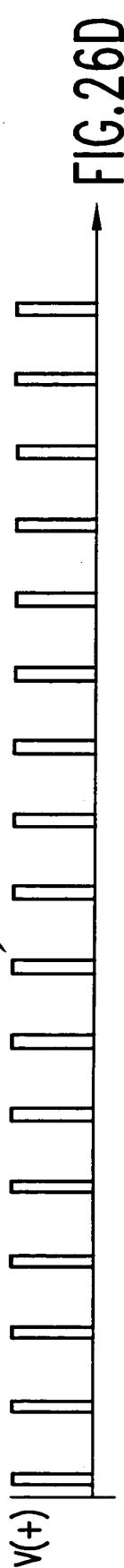
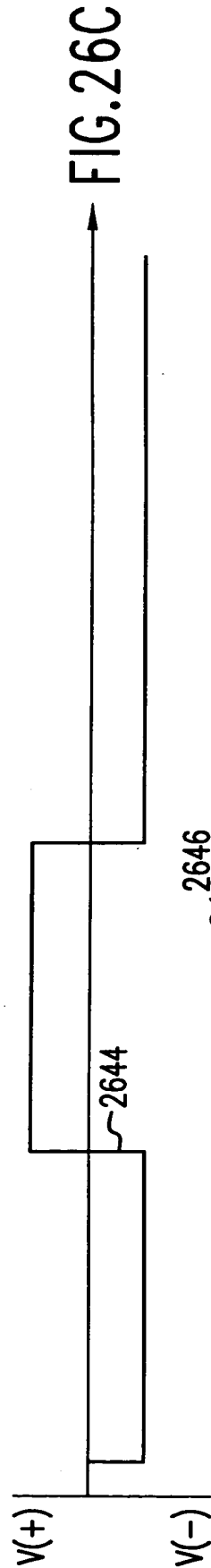
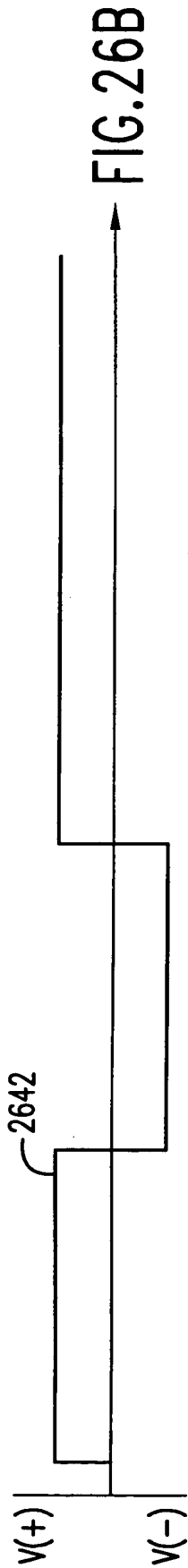
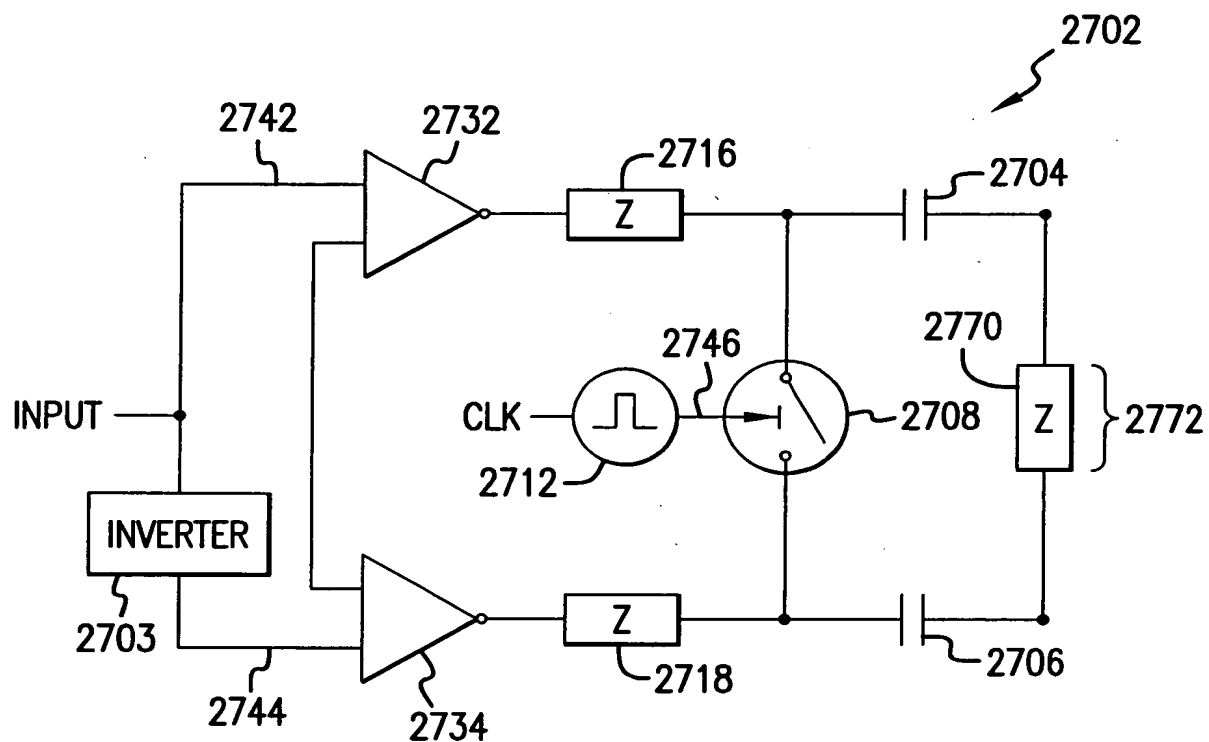
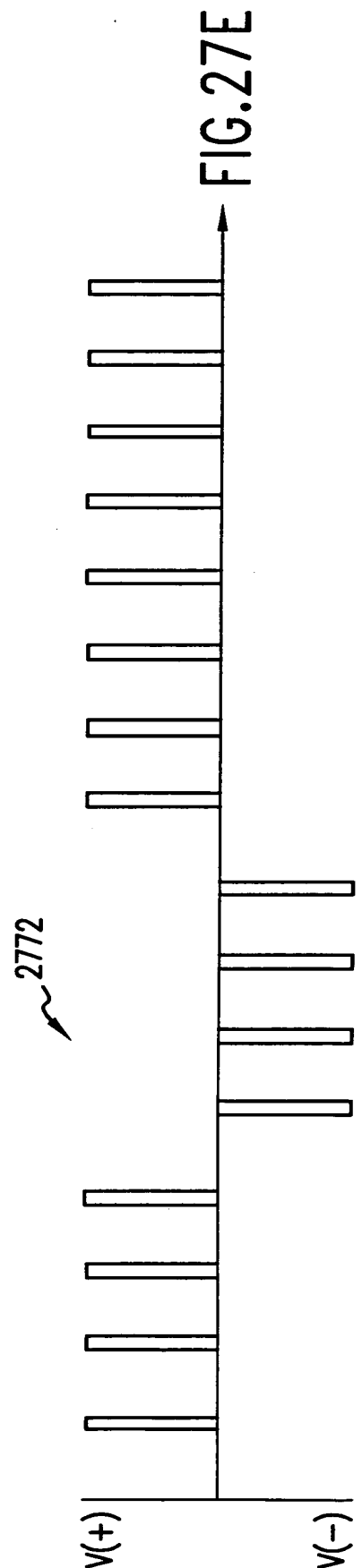
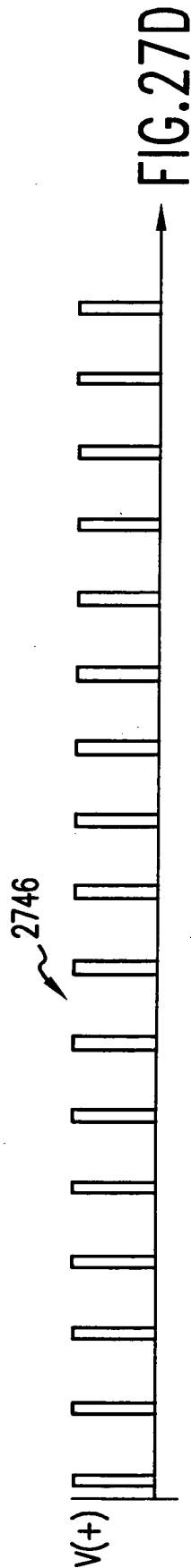
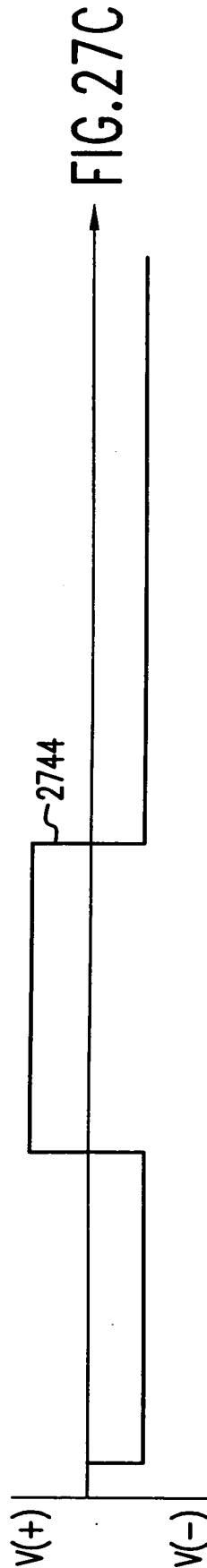
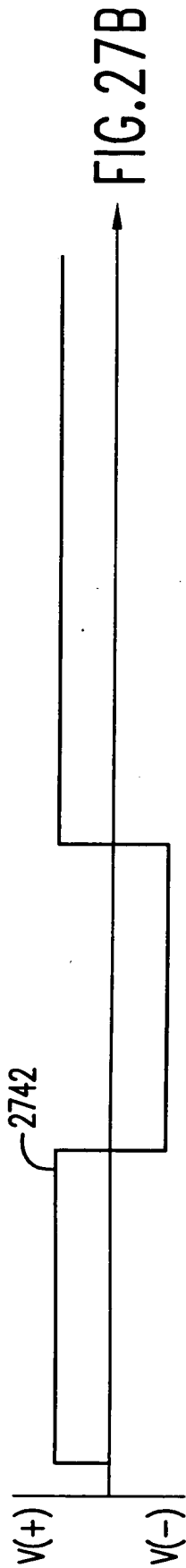


FIG. 26A

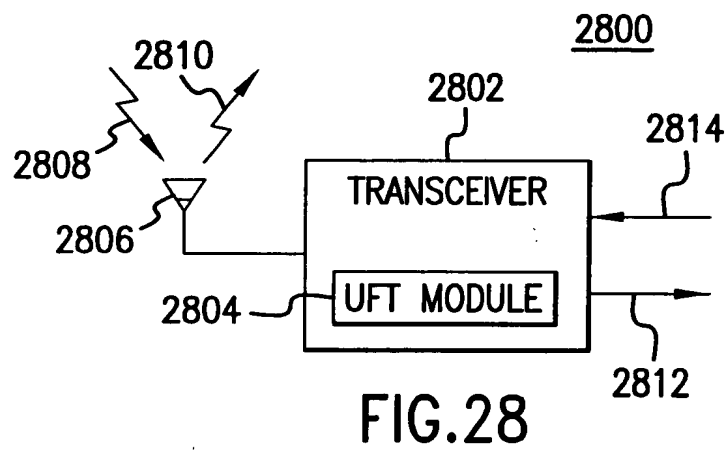


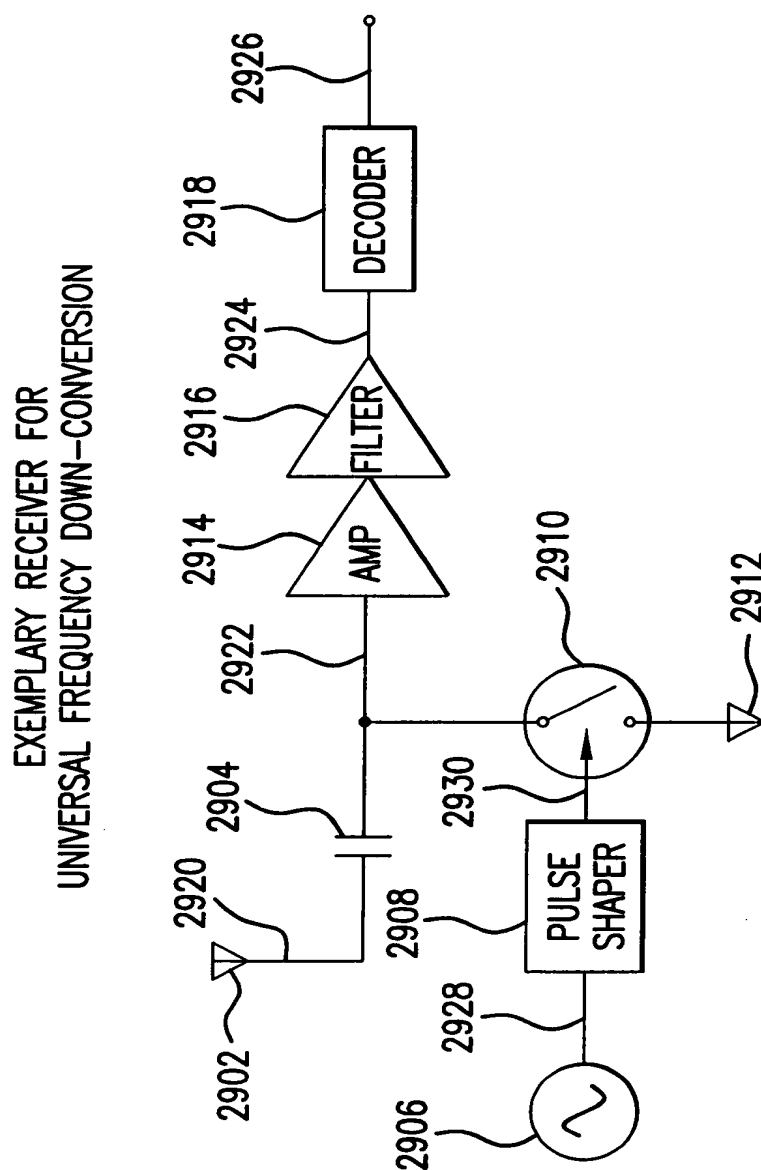






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EXEMPLARY TRANSMITTER USING  
 THE PRESENT INVENTION

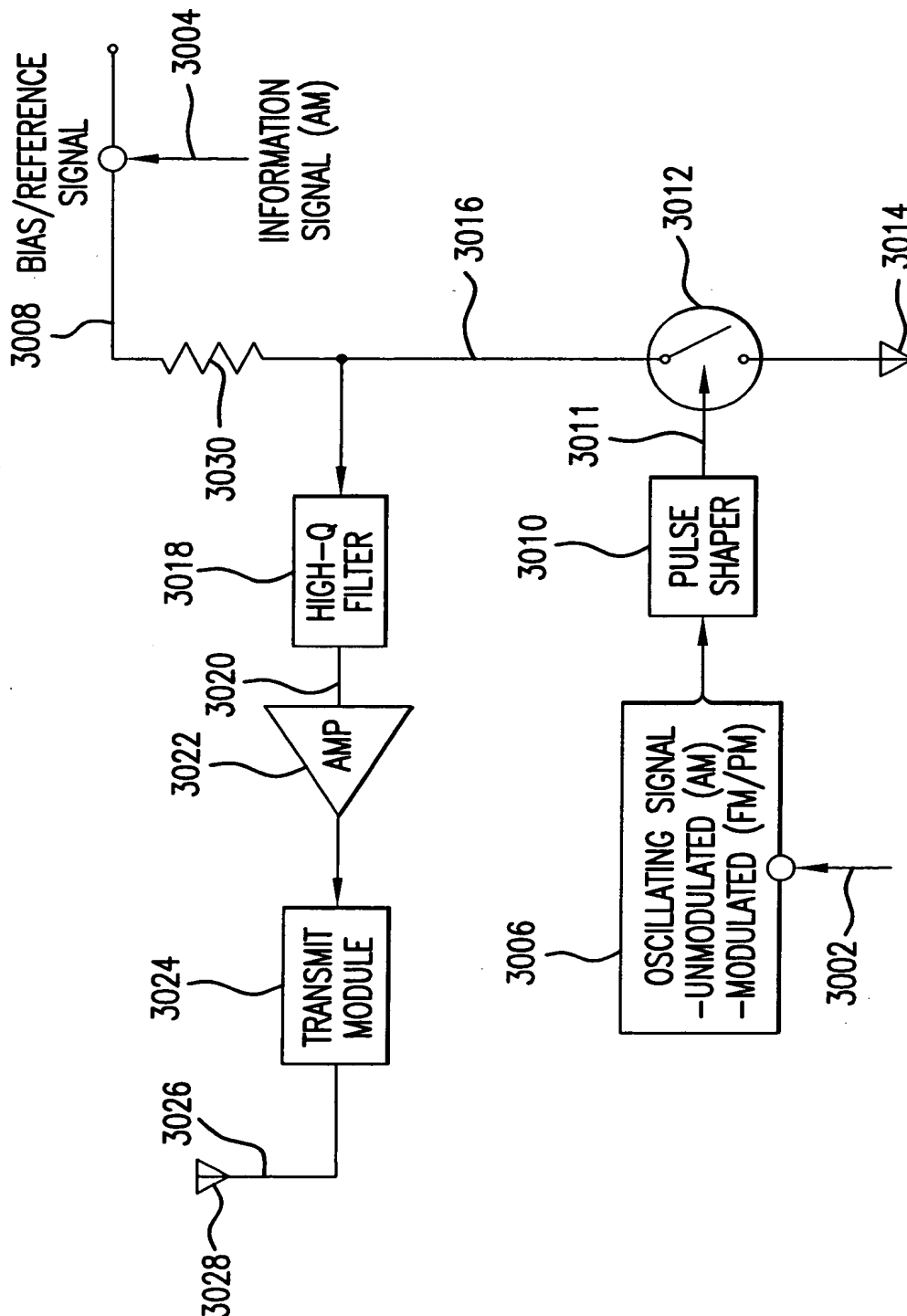
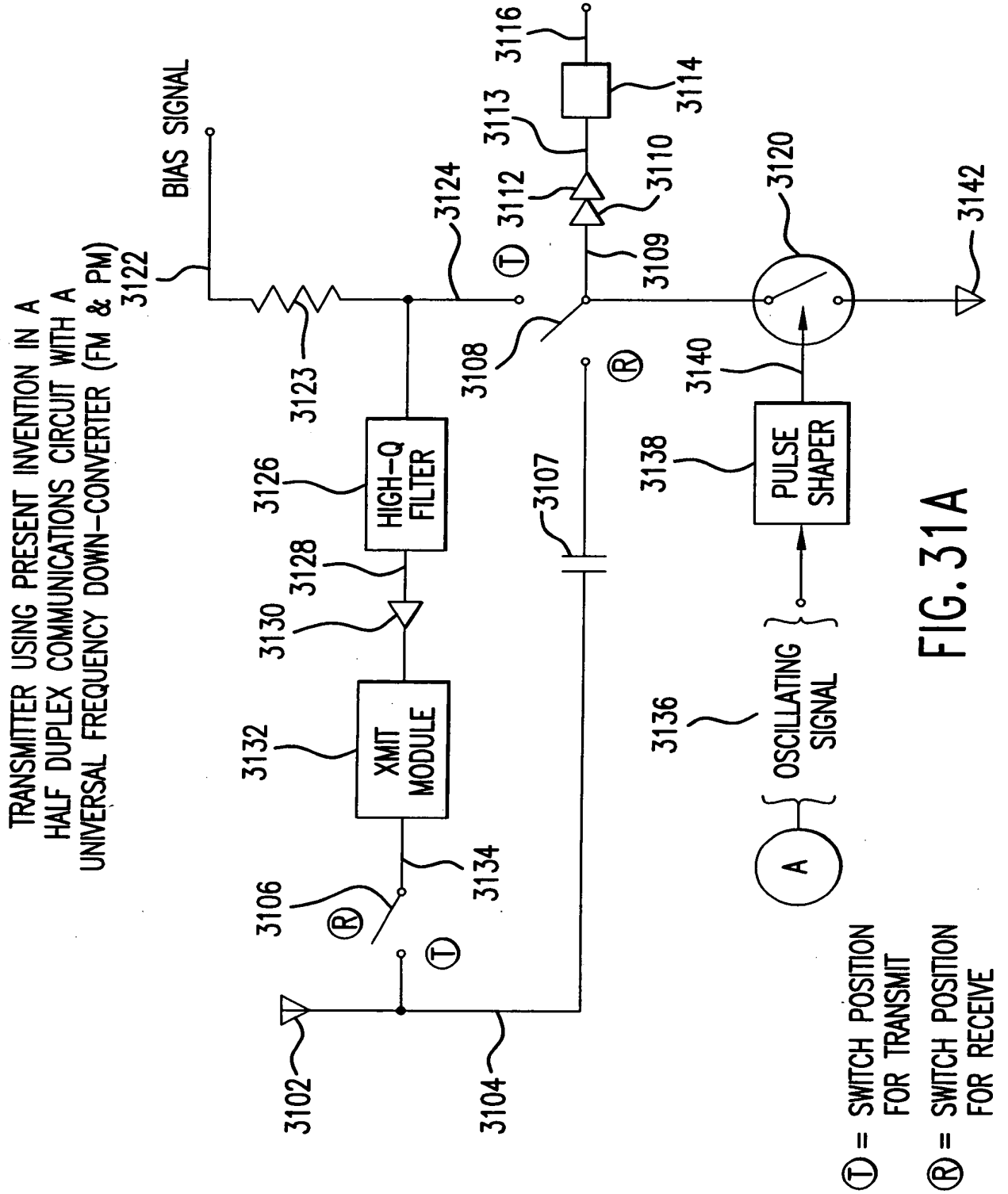
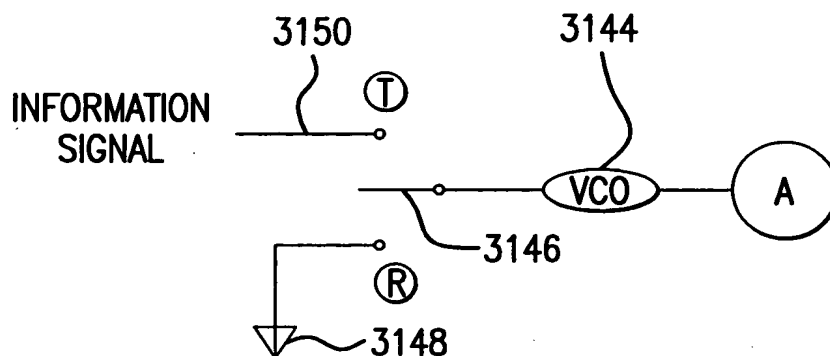


FIG. 30



# FM MODE

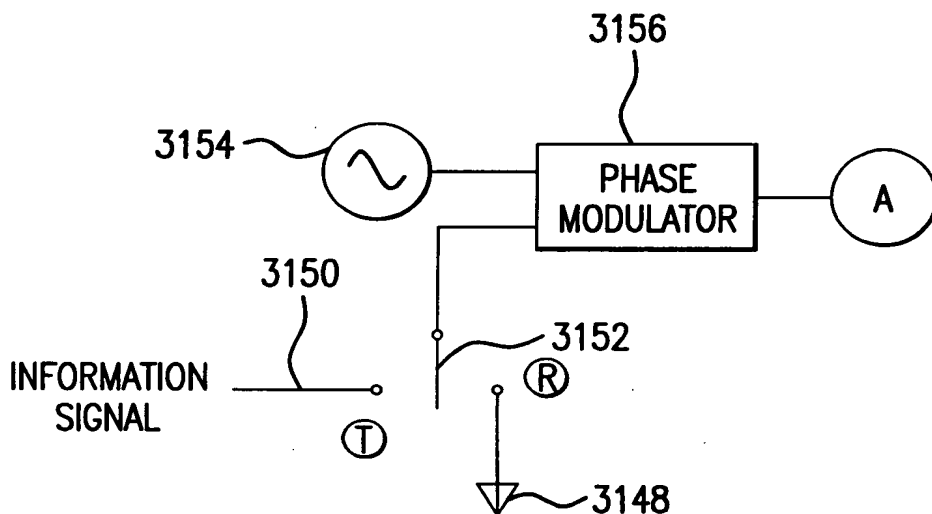


Ⓣ = SWITCH POSITION  
FOR TRANSMIT

Ⓡ = SWITCH POSITION  
FOR RECEIVE

## FIG. 31B

# PM MODE



Ⓣ = SWITCH POSITION  
FOR TRANSMIT

Ⓡ = SWITCH POSITION  
FOR RECEIVE

## FIG. 31C



[illegible]

① = SWITCH POSITION  
FOR TRANSMIT

② = SWITCH POSITION  
FOR RECEIVE

**FIG. 32**

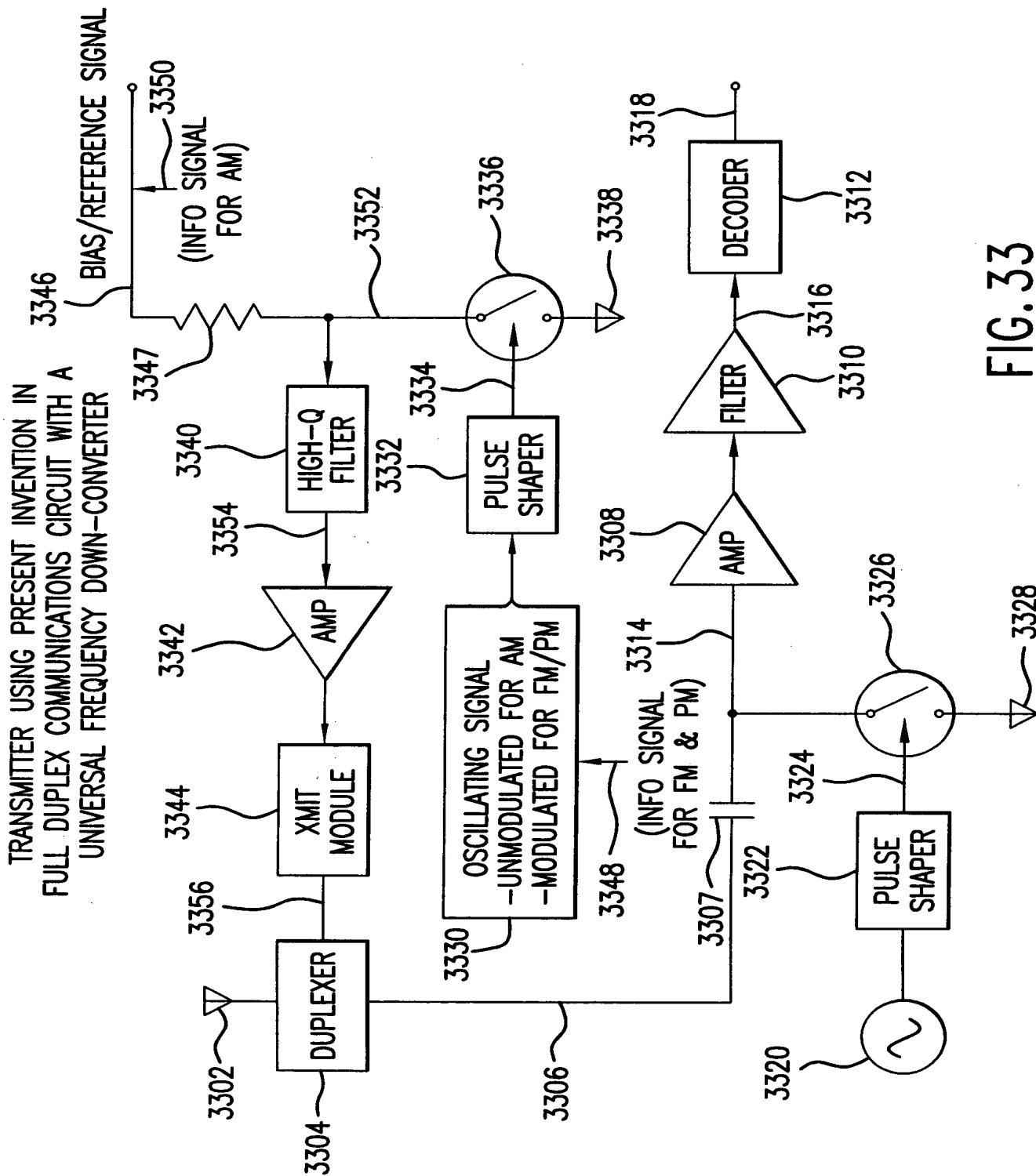


FIG. 33

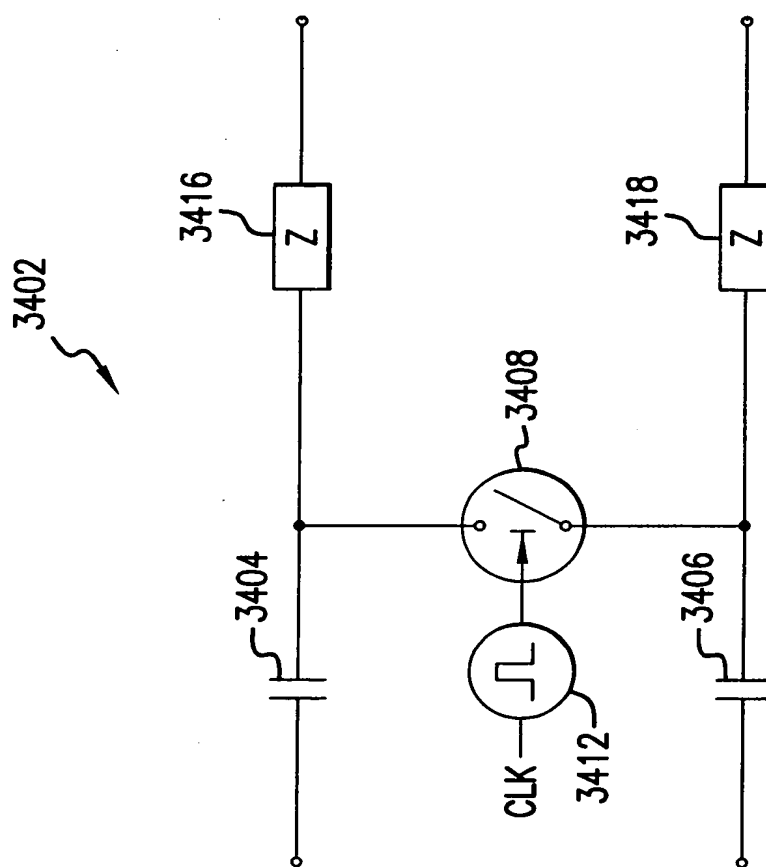


FIG. 34

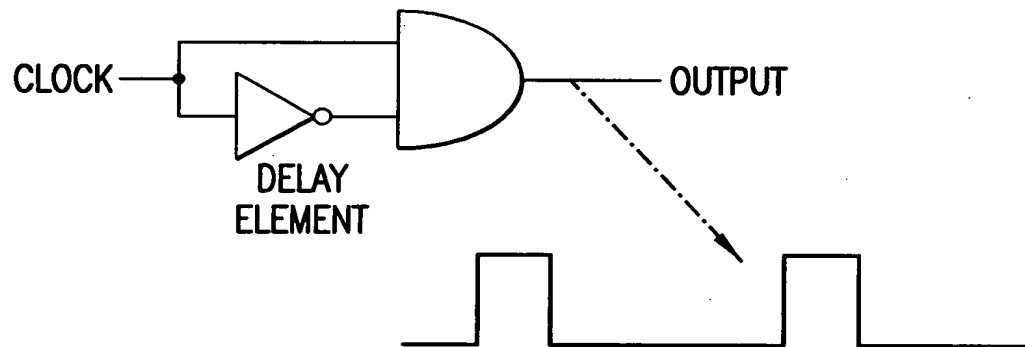
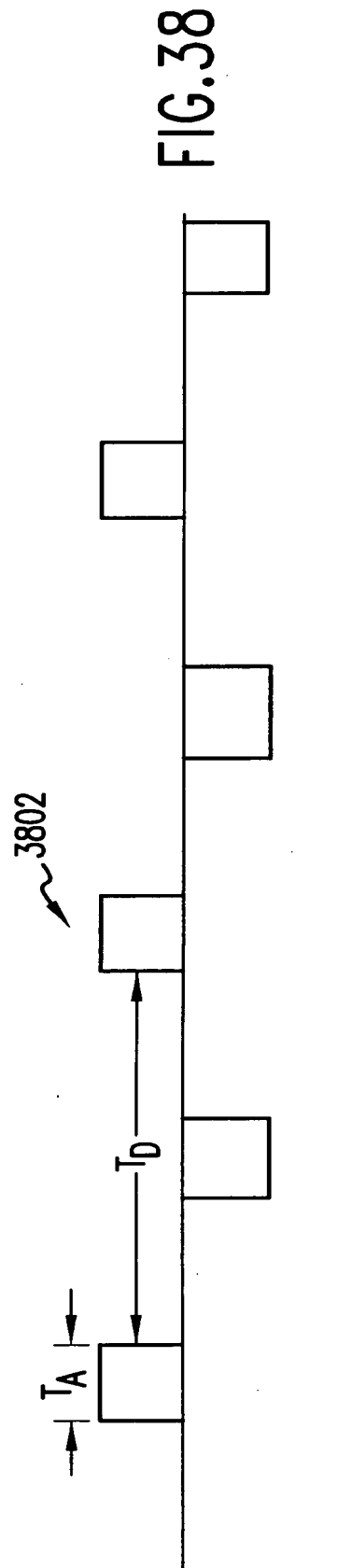
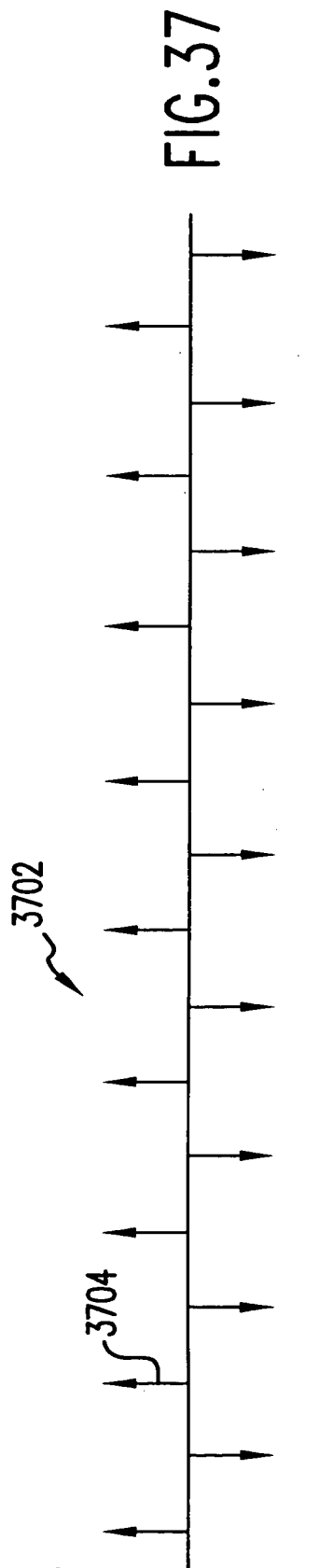
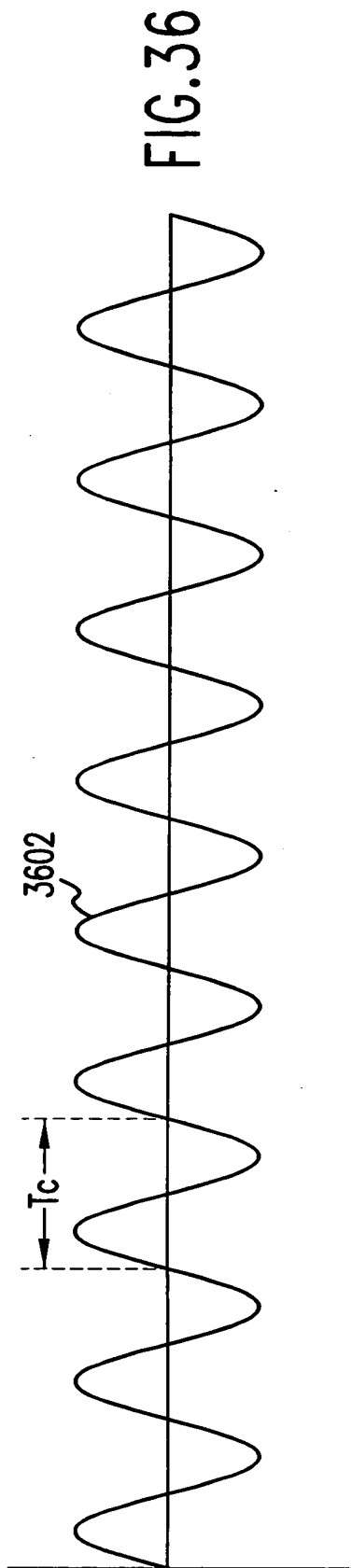


FIG.35



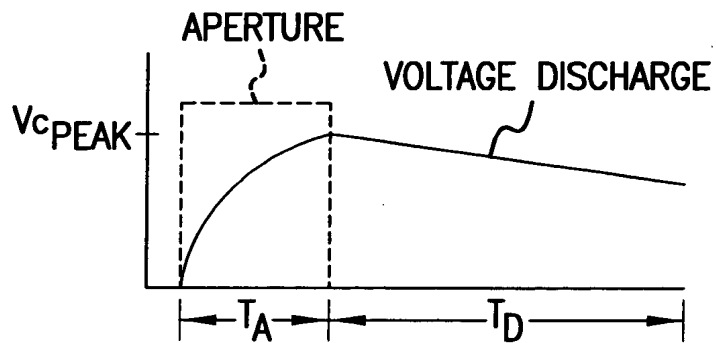
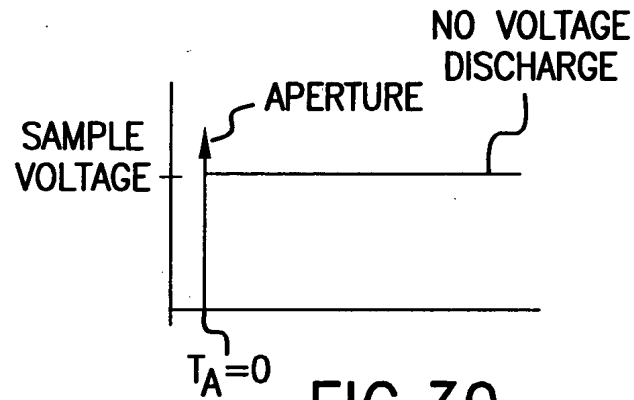


FIG. 40

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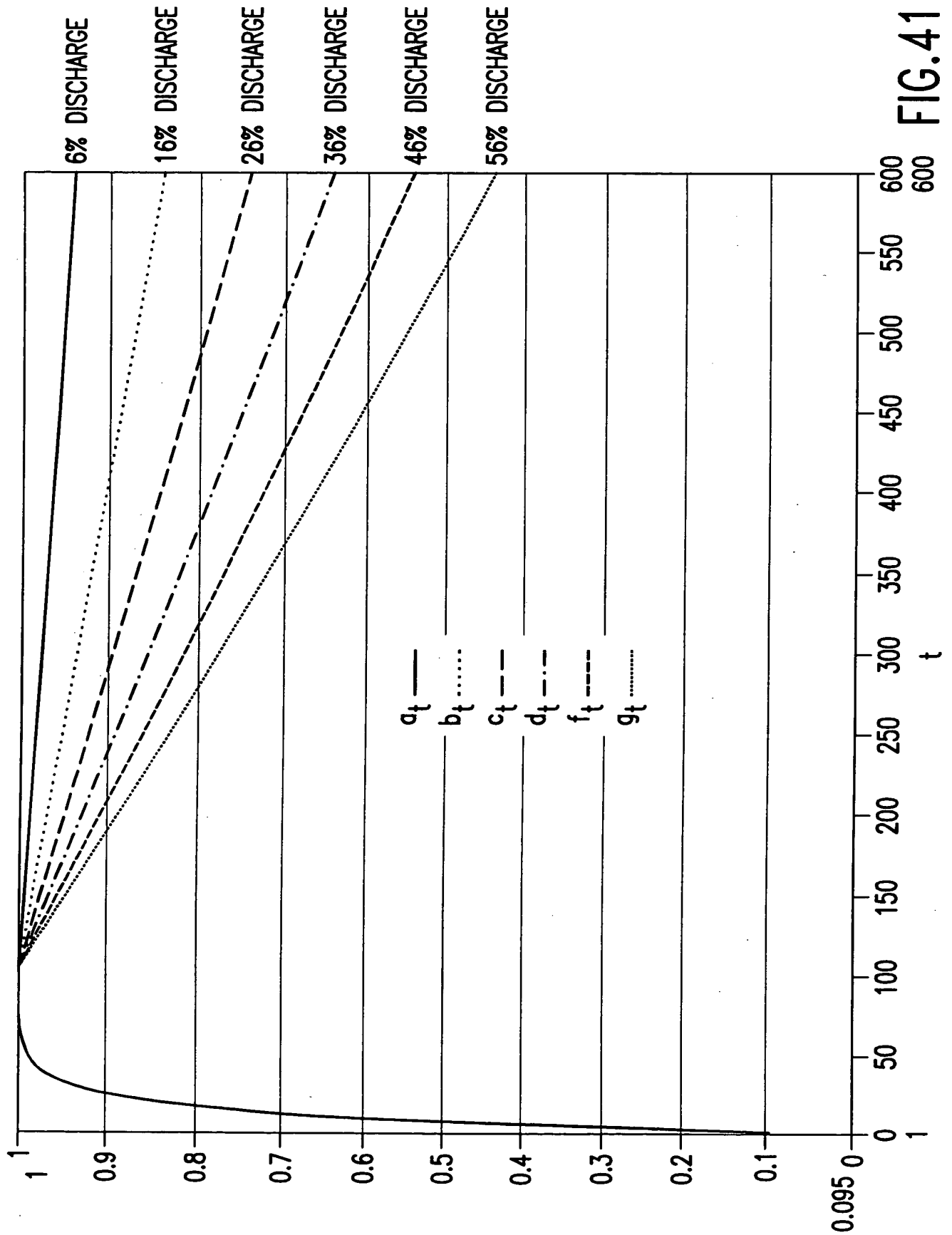


FIG.41

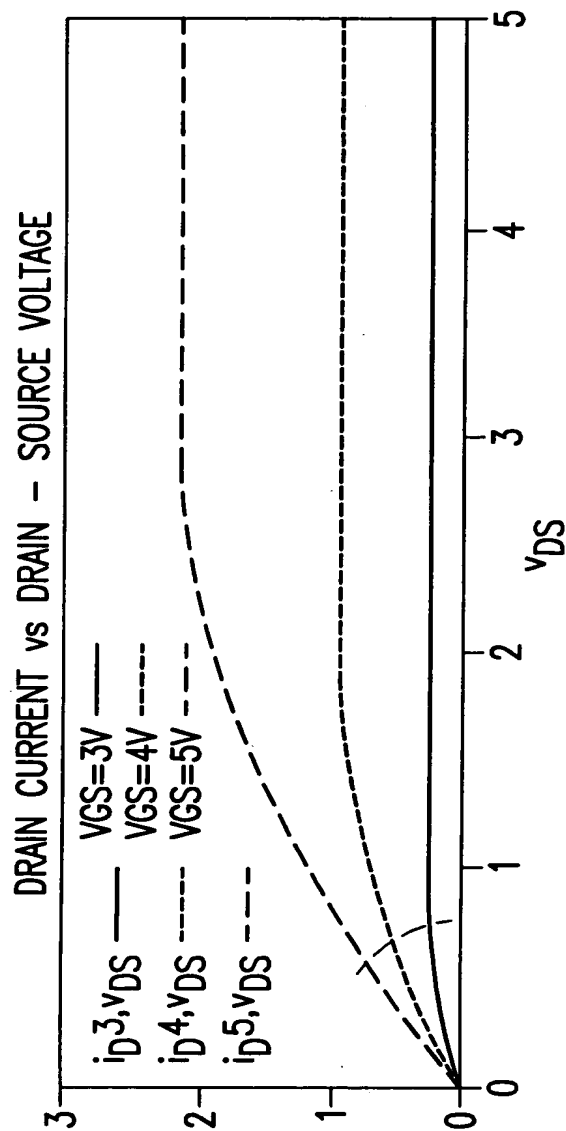


FIG.42



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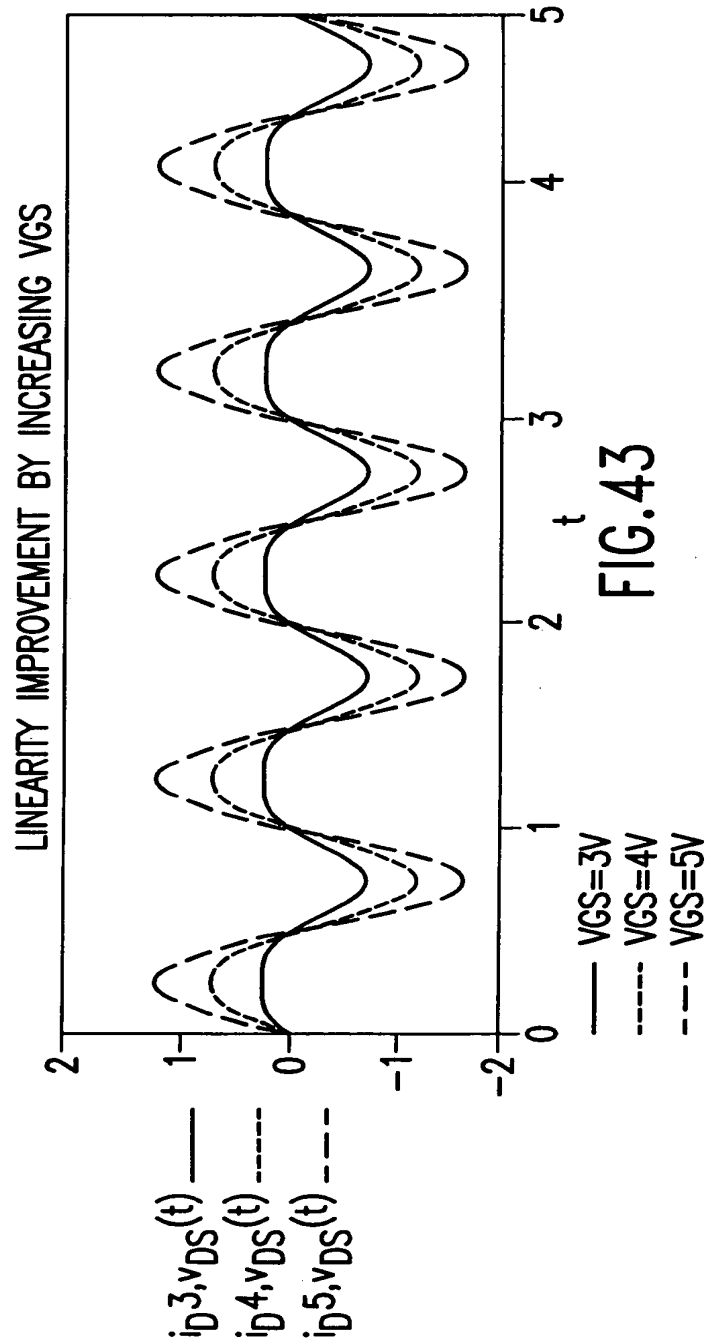


FIG.43

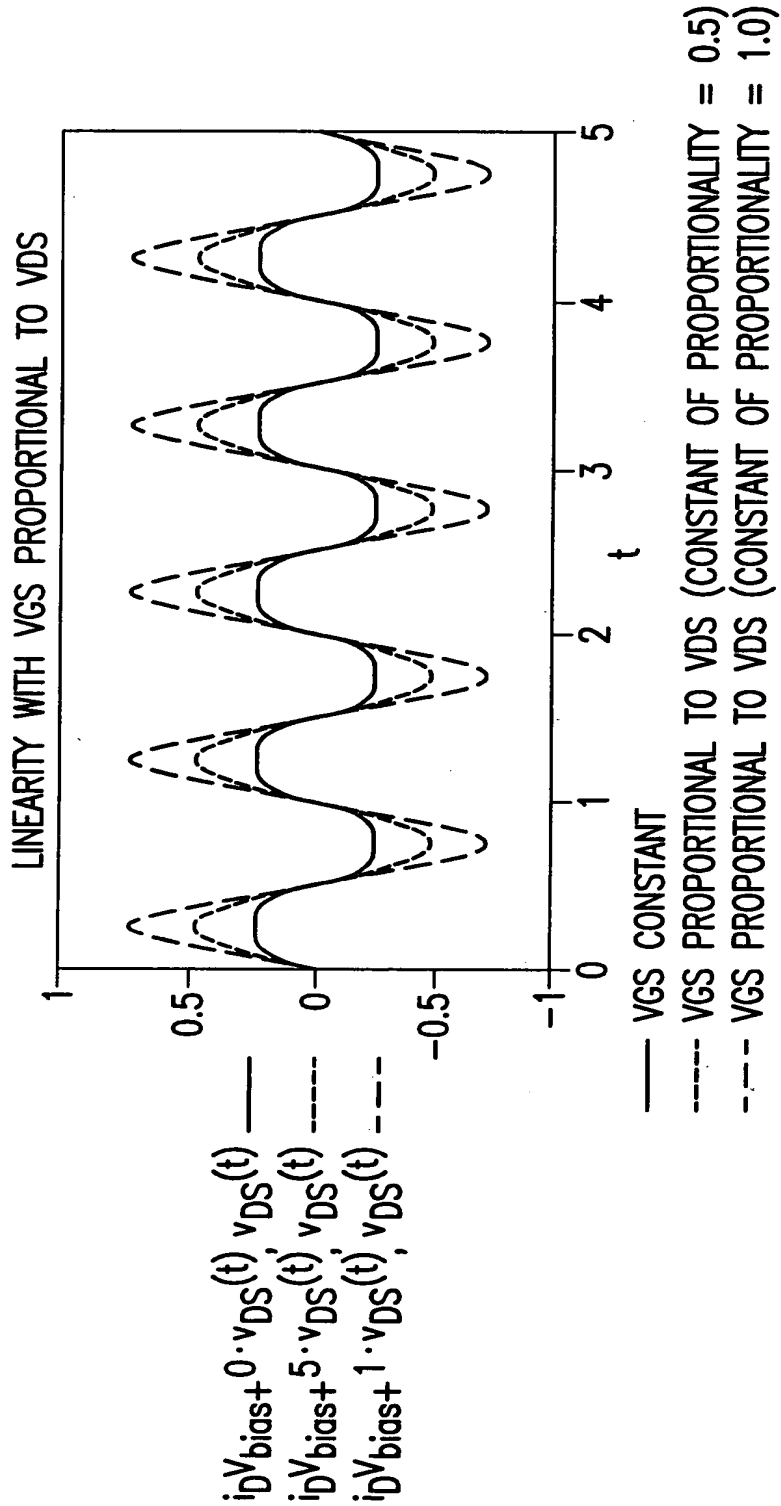


FIG.44

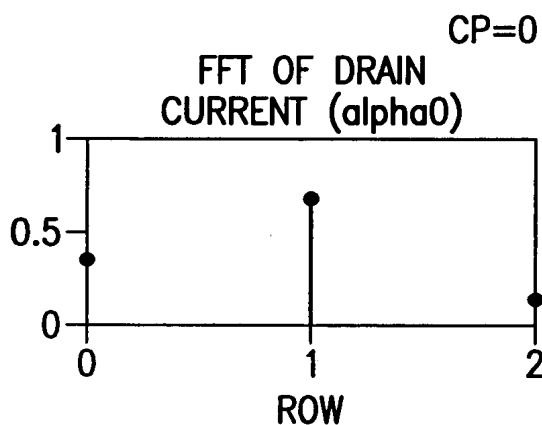


FIG.45A

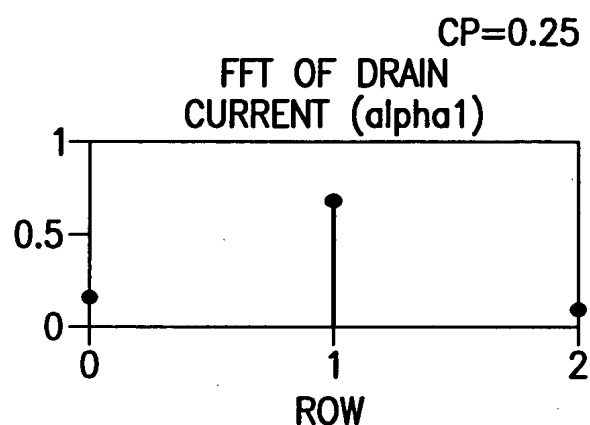


FIG.45B

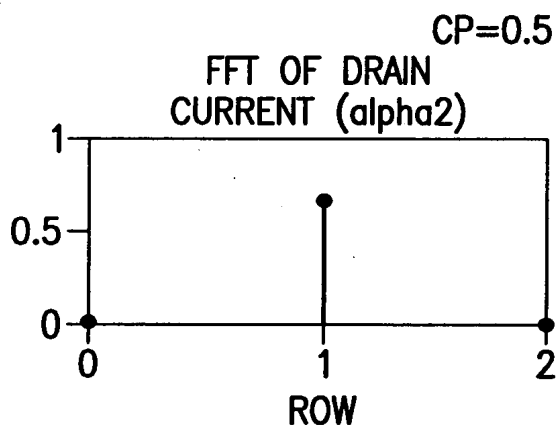


FIG.45C

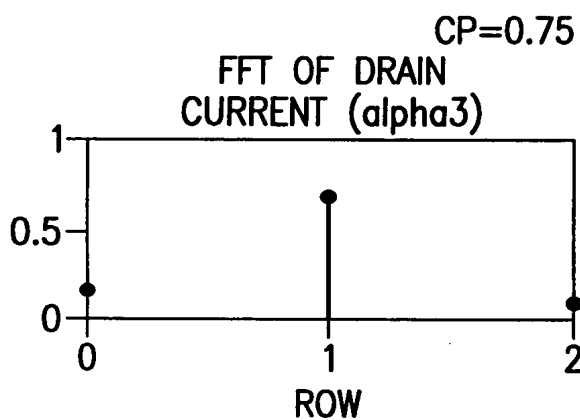


FIG.45D

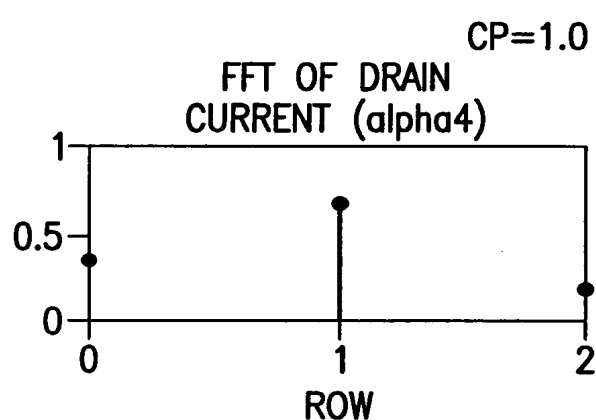


FIG.45E

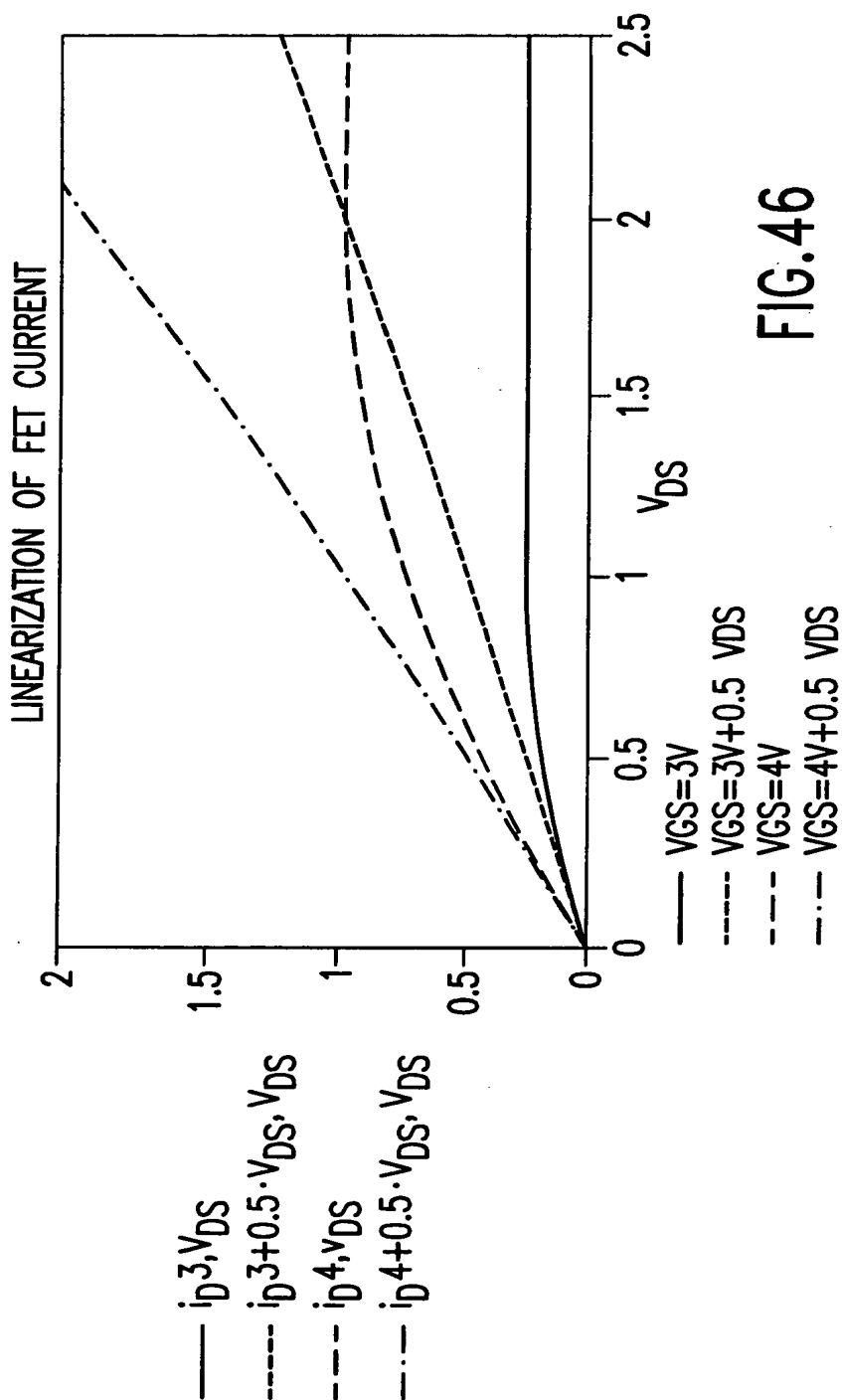


FIG.46

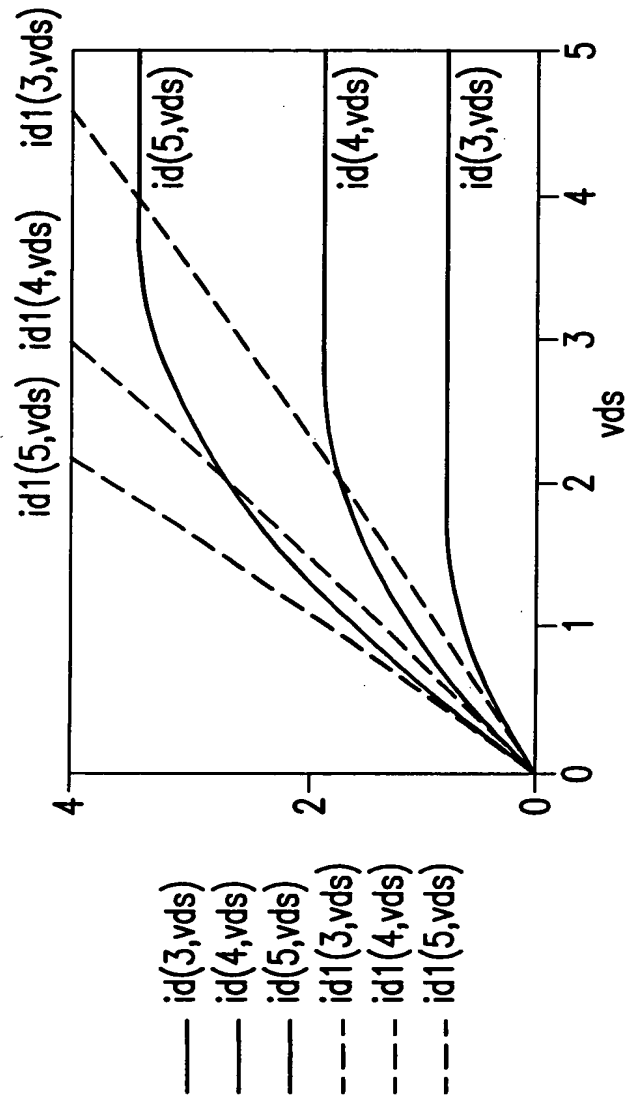


FIG.47

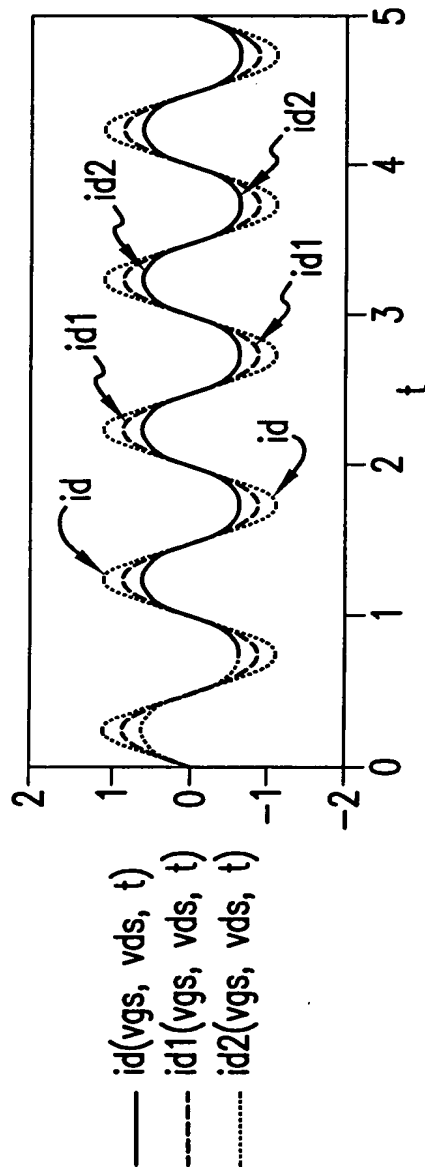


FIG.48

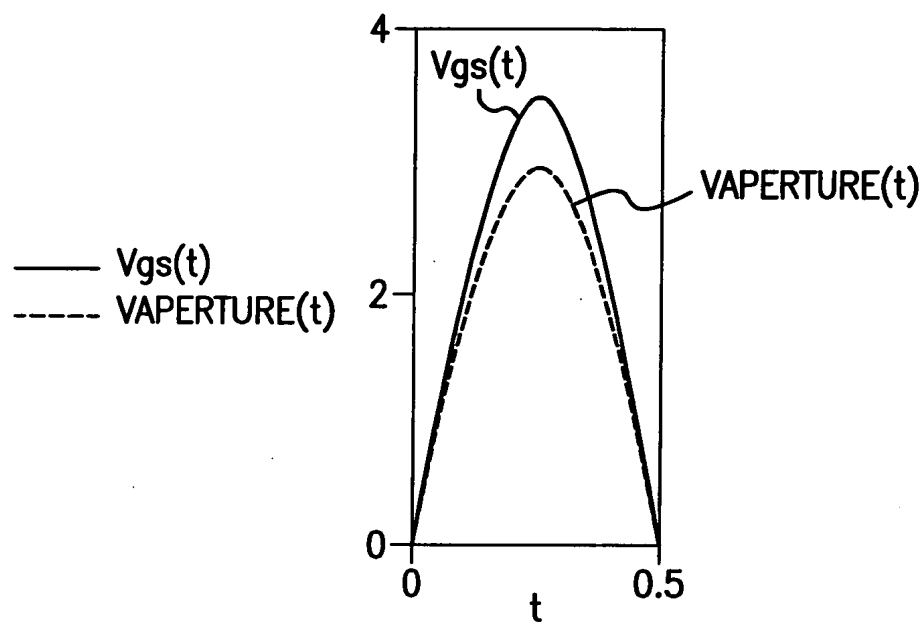


FIG.49

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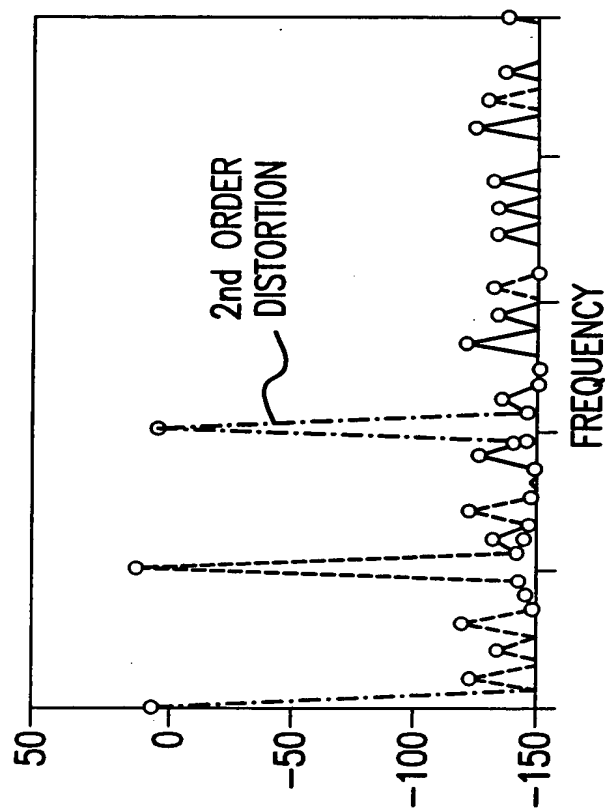
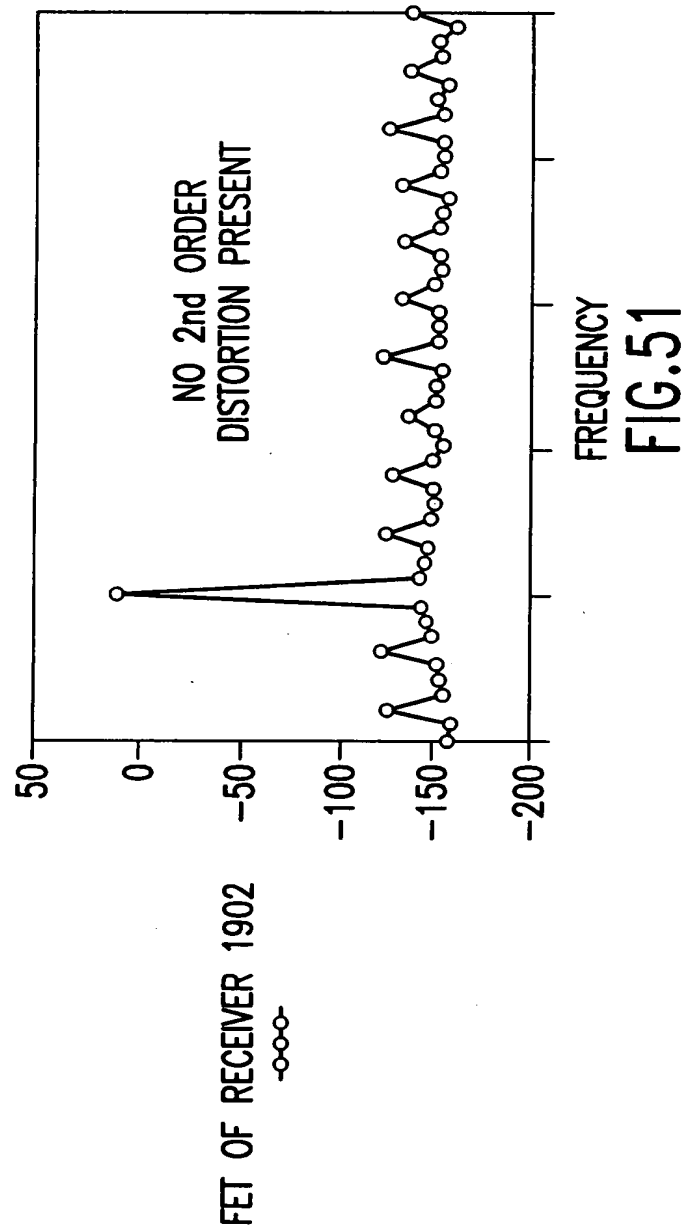


FIG. 50

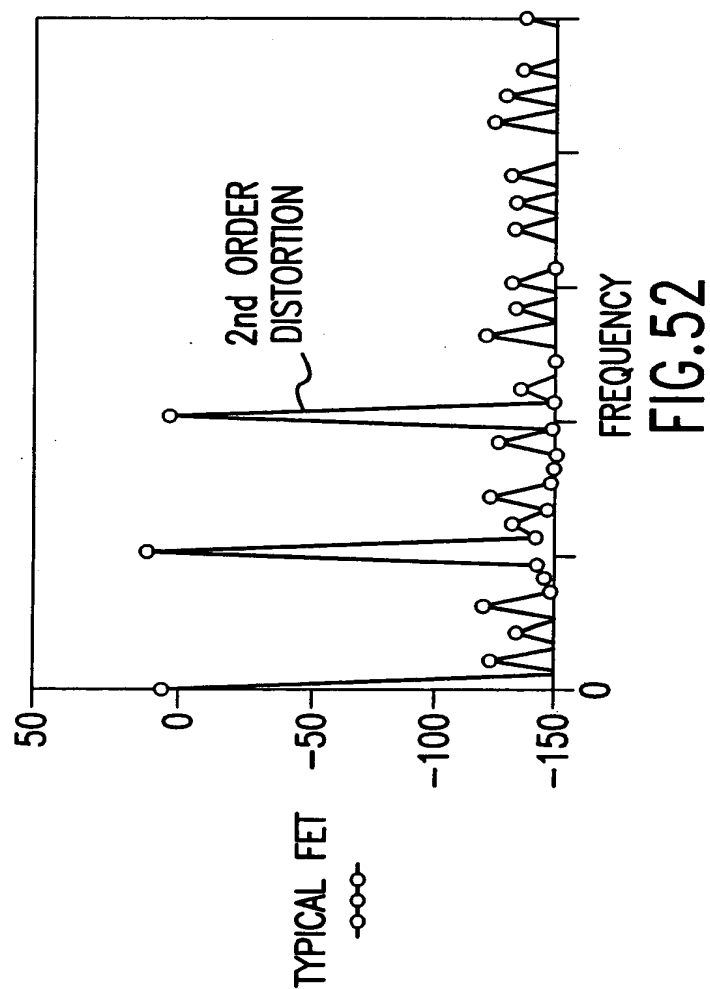
---○--- TYPICAL FET  
 ---○--- FET OF RECEIVER 1902  
 ---○--- FET OF RECEIVER 2002



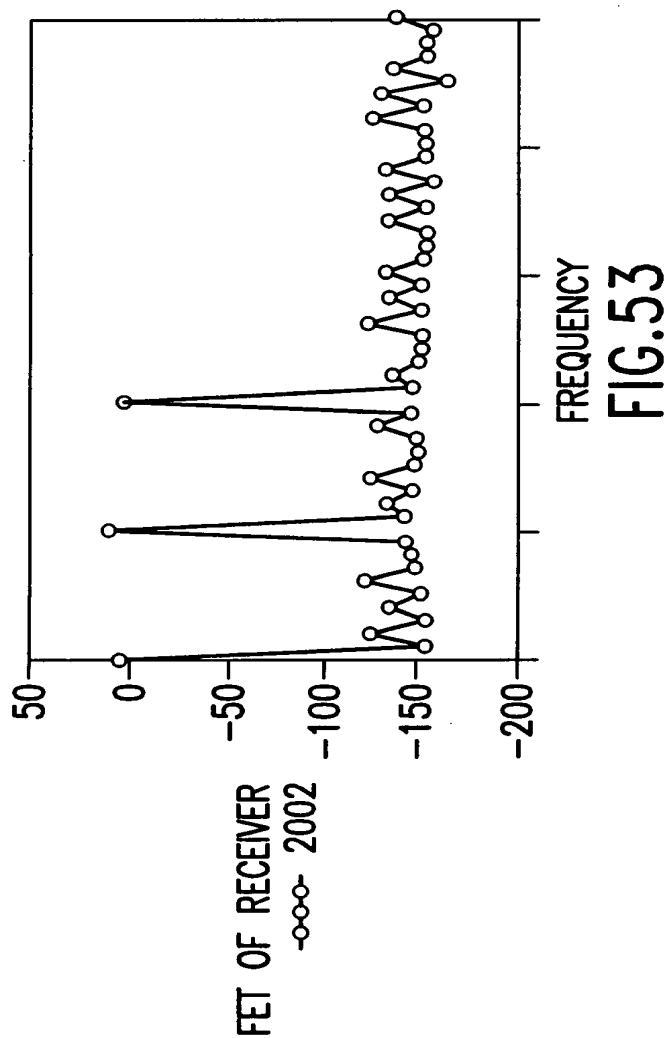
Appl. No. 09/855,851; Group Art Unit: 2681  
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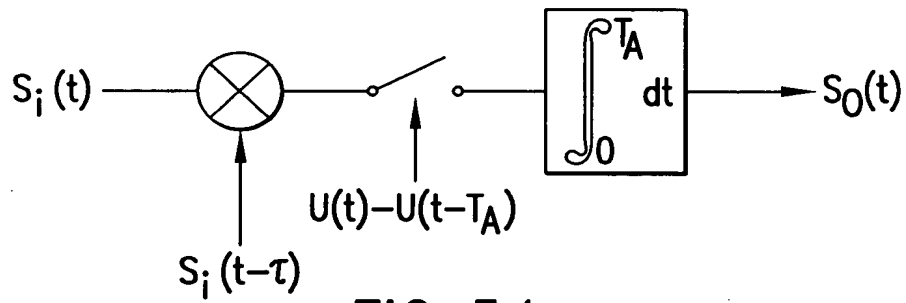


FIG. 54

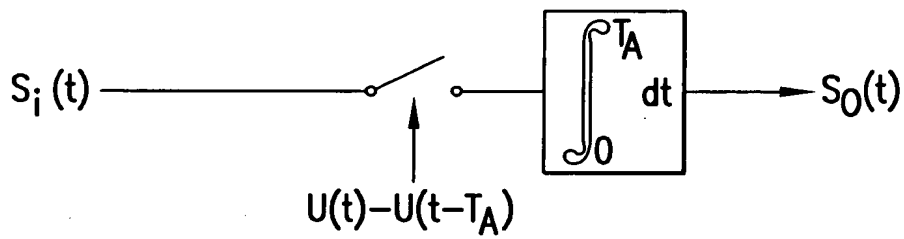


FIG. 55

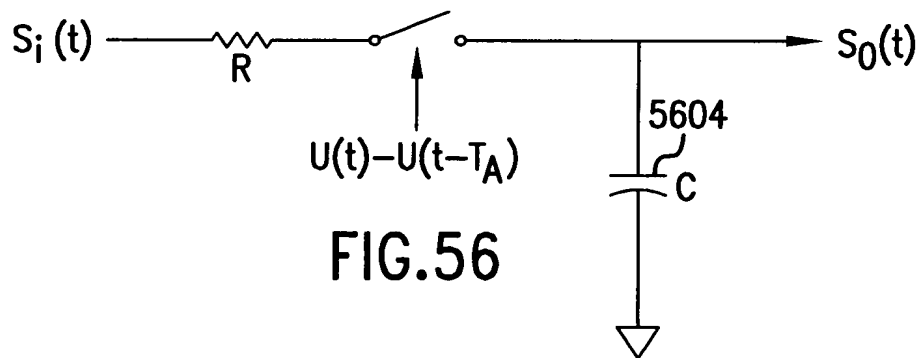
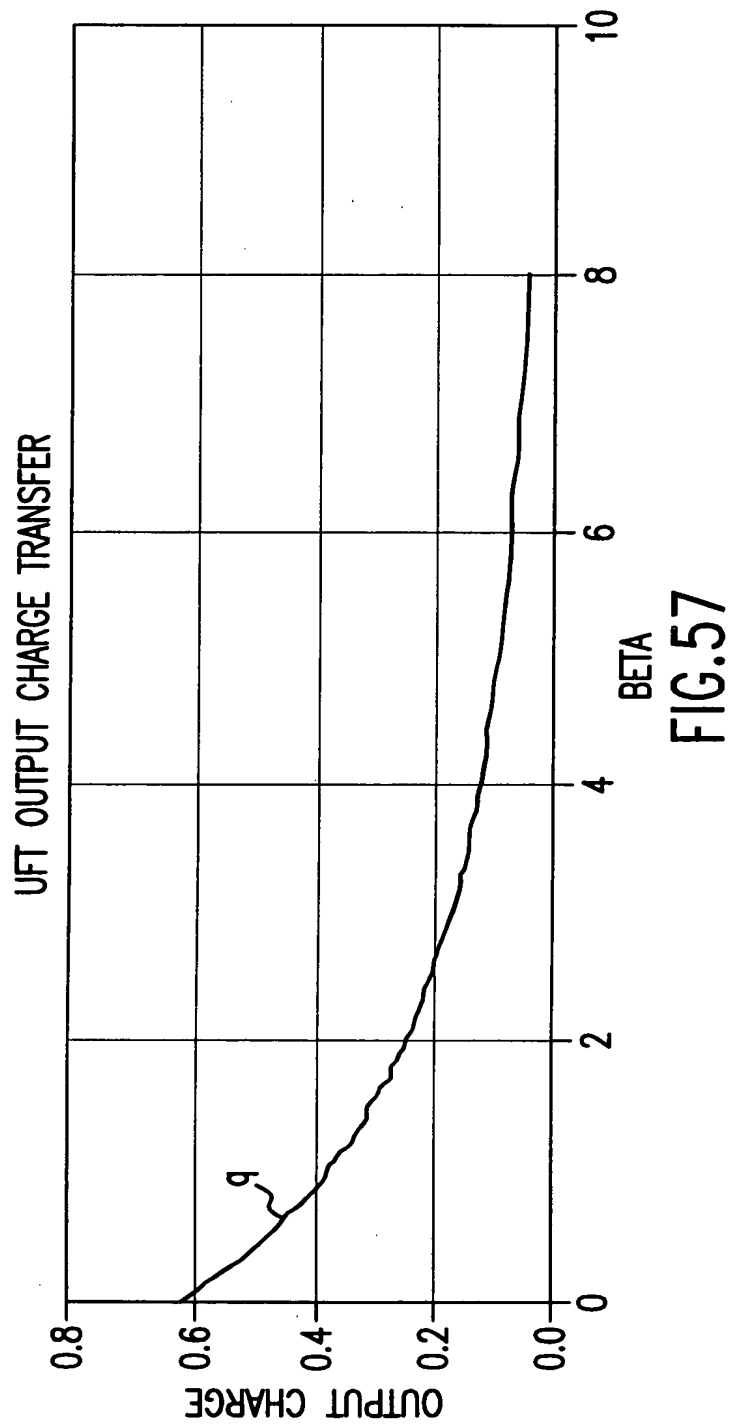


FIG. 56

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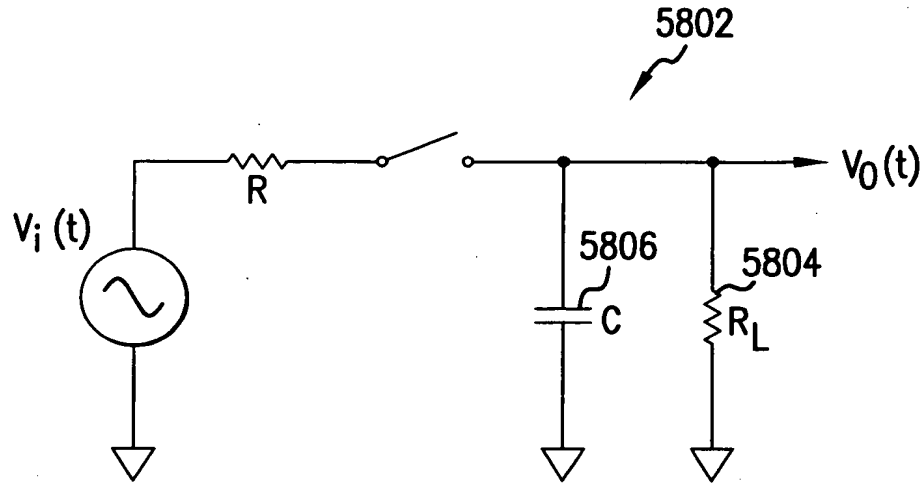


FIG.58

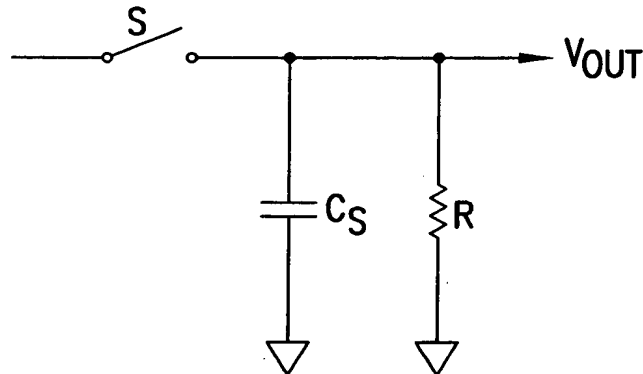


FIG.59

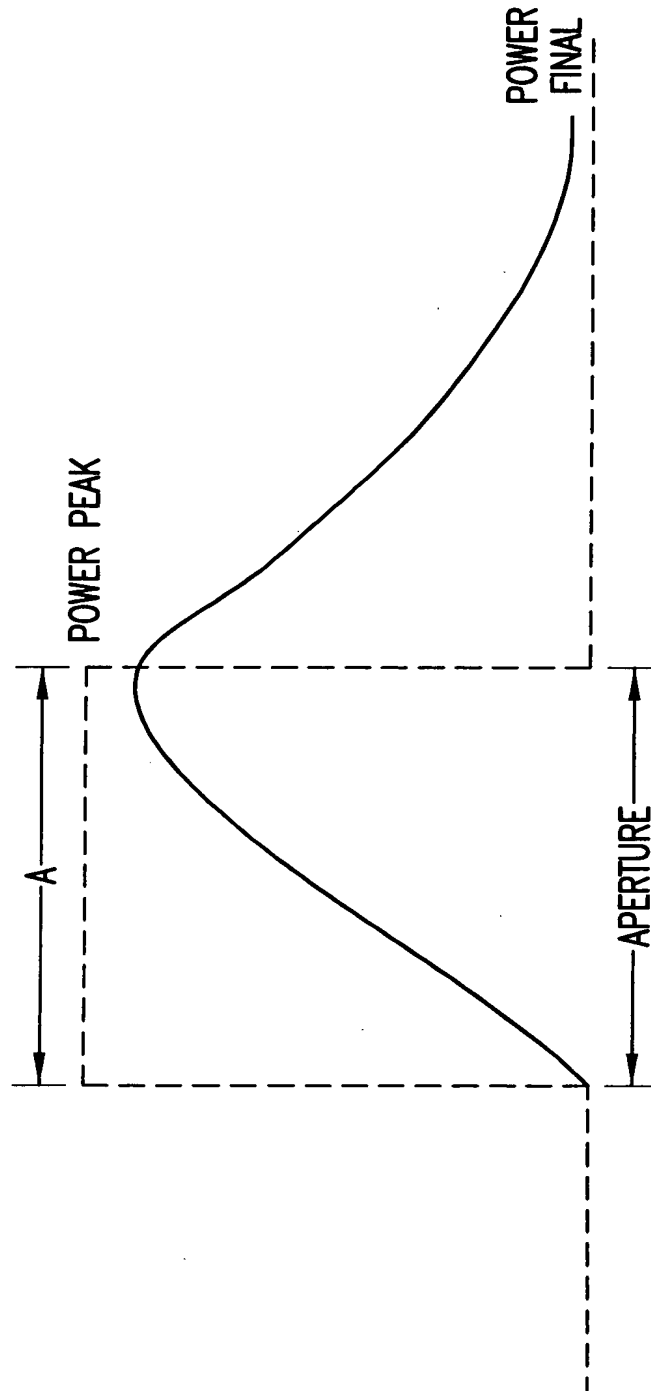
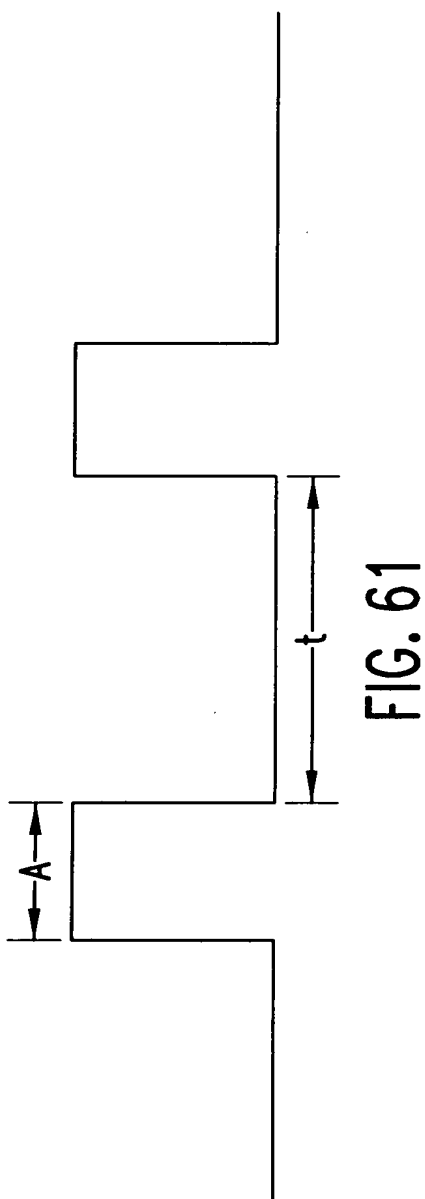


FIG. 60

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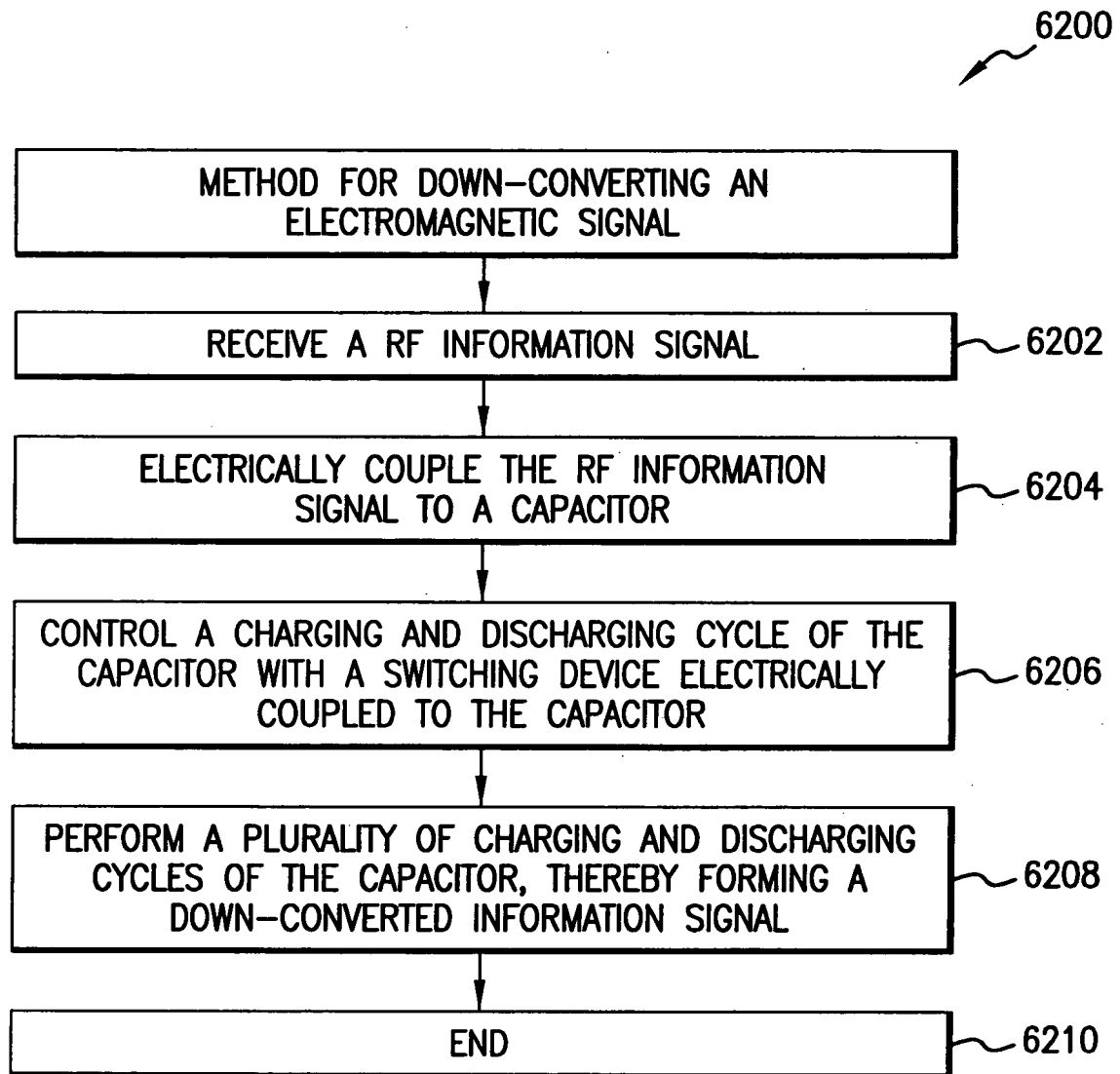


FIG.62